

S T U D Y A S S O C I A T I O N

G E W I S

 **UPREMUM**

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**THE
WIND
EDITION**



EDITORIAL

During the B.O.O.M. weekend on Texel in 2019, winds of force seven to eight led to a somewhat too close encounter with the grass on the dunes for me while cycling over the island. Winds also prevented the trains from riding on several days during the past few years, which meant that I met fellow commuting students who were stranded and got to bond with them over unexpected dinners at an affordable restaurant in Eindhoven.

EDITOR IN CHIEF Anne Nijsten

Wind is a cause for change, directly or indirectly. We may appreciate these changes or dislike them. Sometimes the results are expected, while others are a surprise. They say that as the wind blows, we adapt ourselves to the situation. This seems to be very reactive, while we also need to take our own initiatives to act, even if the wind blows in the other direction. A storm has blown us into our ~17m2 student rooms, and we now know that engaging via a laptop screen does not satisfy the social needs of most of us in any way. A lot of students are craving to meet their classmates and friends, and currently it takes a strong initiative to get out there, because the regulations (at the time of writing) do not allow for a lot of breathing space.

Because we are still waiting for a breeze that brings us back to the campus, in this edition of the Supremum we take some initiative to let you meet others in our department through their stories. The first year committees, the Supremum writers, an aspiring beer brewer, Serpentine AI, ESEV Zephyr, department staff members and others are all here to let you meet them and their work.

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CHAIRMAN'S NOTE

DRIFTING OFF ON THE INTERNET: A DEEP DIVE INTO DUTCH SUSTAINABILITY AND WIND ENERGY

If you google the word "wind", the first few hits are pictures of wind turbines. Curious as I am, I clicked the website of the first hit. I found myself on the website of the International Energy Agency, IEA. IEA is a worldwide organization 'committed to shaping a secure and sustainable energy future for all' as they state on their website. I became rather interested in this organization which apparently has 30 member countries and 8 association countries. Sustainability is an interest I have myself, so any party that puts in effort to improve sustainability is liked by me.

TEXT Irne Verwijst

It turns out that the Netherlands is a member country of this agency and has been since 1974. With its membership, the website of the IEA includes some rather interesting statistics on key energy aspects of the Netherlands. As Computer Science and Mathematics students, plots are always something that catches our eyes. Noticeably, the IEA seems to have all the data concerning the Netherlands with regards to sustainability.

I'm definitely not a professional on sustainability nor statistics, and I most certainly do not know or remember abbreviations like TWh, CHP elec and Mtoe, but I spent quite some time looking over these statistics. It is intriguing how much has changed since 1990, but also that there is still a lot of progress to be made.

I also found the Energy Policy Review of the Netherlands dating back to September 2020. The review includes hard facts and interesting details on the current status of the Netherlands with regards to sustainability. The review includes sentences like 'The Netherlands had made notable progress on its transition to a carbon-neutral economy' but also 'the Netherlands remains heavily reliant on fossil fuels and has a contraction of industries that will be hard to decarbonize.'

I'm trailing away from the theme of this Supremum: Wind. The information on the Netherlands is fun and all, but let us dive deeper into the topic of wind. Lucky for me, the IEA website has a subpage on wind. The IEA claims that 'Onshore wind is a proven, mature technology with an extensive global supply chain and offshore wind is also expected to grow rapidly'. Sounds promising if you ask me. However, if I must believe my friend that studied Sustainable Innovation at our university but quit after the first year, the production of wind turbines is costly with regards to emission. I'm not here to cause controversy, but aspects of wind energy like the production of a wind turbine are important to know. One of the statements on the wind subpage surprised me. It states that the IEA expects a significant slowdown of wind capacity due to phase-out incentives in China and the United States. The accompanying bar charts show a decrease of around 40% wind capacity in China. As China is responsible for the highest bar in the bar chart at the moment, it is sad to see such a large decrease.

Well, I have gained some new information. Takeaway from this maybe somewhat uninteresting piece of my mind: keep exploring the internet and educate yourself on the subject of sustainability.

RECTIFICATION

Unfortunately the text that was printed on this page was the article for Education First in Supremum 52.2. The text that was supposed to be printed here will be published in the next edition.



BREWING DOUBLE IPA

*H*eya! I'm up for another recipe. This time I'm going to teach you how to make a beverage many of you should know all too well. Now that we cannot enjoy our beers at GEWIS, maybe we can make them ourselves at home! This is something you can do perfectly during quarantine and with some basic kitchen utensils and some basic ingredients. It might need a bit of creativity, but that's what makes it fun. Maybe in the end, you'll gain a new hobby as I did some time ago. The cool thing about making your own beer is, as with many recipes, the sky is the limit! Always wanted a stout / lambic crossover? You can try to make it! In the market for a dragonfruit weizen? Should be a breeze. But you get the point. Before talking about a specific recipe, let me tell you something about how beer is made.

TEXT Ruben Brinkman

Beer has been around for quite some time, but the process we will use has been used for just a couple of hundred years now. To make a basic beer, all you really need is some malted grains, yeast and some hops. Now within those three, you can vary a lot, and that's where the fun lies. When you start with brewing, you extract sugars from the malted grains. Of course, these grains also bring in flavor. You start by "crushing" the malt, meaning you break it open, or you can just buy it pre-crushed. You add this to water and start the process of making wort. Wort is water in which crushed malted grains have been steeped. It can be rather sweet. After all the grains have been filtered out, you start the boil. This is to kill any bacteria that are currently present and to let the hops do their magic. The hops bring bitterness, flavor and very important aromas! Depending on when you add the hop during cooking and what kind of hop you add, those 3 characteristics differ. After cooking, you want to cool down the wort. Once cooled, you can add yeast and let it ferment. The yeast will use all the sugars that the grain released and eat it, during this it will produce alcohol. Once the yeast has done its job, all we need to do is put it into some bottles, let it carbonate and you're all set! You have just successfully made your own beer.

Now, this might sound a bit daunting, and to be honest, I did oversimplify it a tiny bit, but, you should really try it yourself. You have so much ability to add your own creativity and ideas and it really isn't that hard once you have done it once.

Now for an actual recipe you can follow; we're going to make a double IPA. Thus, it will be quite strong! To counter that, we'll make sure it has nice floral notes and is a bit fruity. The list of ingredients might seem a bit scary, but all these things are really easy to find online and quite cheap as well!

Now for 5 liters of beer you need the following things in terms of ingredients:

LIST OF INGREDIENTS:

- » 5L of tap water
- » 1.5 kg of pale ale malt
- » 30 grams Simcoe hop
- » 30 grams Cascade hop
- » 5 grams Perle hop
- » 1/4 packet of Safale US-05 yeast
- » 235 grams sugar

If you want to make this in a larger batch size, I would add Cara-120 malt as well. For 10 liters, I would add 150 grams. If you are making just 5 liters (or less even), I would not add the extra malt, because it is not worth buying then.

As for equipment, I will touch upon those during the recipe.

TALKING ABOUT THE RECIPE LET'S GET STARTED!

STEP 1

First, you need to make sure all the malts have been crushed open. They should not be powdery but just cracked open. This will ensure all the sugars can efficiently be extracted. For this recipe, I would advise you to buy them pre-crushed. It makes life a whole lot easier.

STEP 2

Start by bringing the water to 63°C. Add all the crushed grains and make sure you get it up to temperature again. Keep it at 63 degrees for 35 minutes in total. Now, bring up the temperature to 72°C. Keep it there for another 35 minutes. Afterwards, bring the temperature to 78°C and keep it there for 5 minutes.

STEP 3

Now we need to filter the grains out of the wort! At this scale, I would suggest you use a simple colander and catch the wort in another pan. If you start brewing at a somewhat larger scale, I would suggest investing in a brew bag. This makes the whole process quite easy. Once all the grains are in the colander, put the colander above the pan you were brewing in and pour about 1.5 liters of warm water over it. This is called sparging. It will release the last bits of fermentable sugars from the grains.

STEP 4

Now with your fresh wort, crank up the heat and get it cooking! Once the wort is cooking, add all the Perle hops to the pan. After 60 minutes of cooking, add 1/6 of the Cascade and Simcoe hops. After another 10 minutes, add another 1/6. 5 minutes later turn off the



heat and add another 1/6. If you read well you should have deduced we are cooking for a total of 75 minutes. In the end, you should have about 5 liters left still. If not, you can add boiling water till you have 5 liters again.

Again, let's talk about why we add the hops at different stages during the cooking and not just all at once. In the beginning, I talked about how hops add flavor, bitterness and aroma. Hops that are added at the beginning of the boil, add bitterness. Hops that are boiling between 15 and 30 minutes, add flavor. And finally, hops that are added in the last 5 minutes or even after boiling, add aromas. You might have noticed we only used half of the hops during boiling in this recipe. The other half will be used after the fermentation and will induce lots of nice hoppy aromas.

STEP 5

Now we need to cool down the wort. From now on, you have to be very clean and make sure no bacteria can be introduced as they could spoil our beer. I would suggest getting some PURO OXI or Starsan when ordering grains and hops. It is very cheap and an easy and food-safe cleaning agent. Whilst the wort is





cooling, take 200 grams of sugar and dissolve it in a bit of boiling water. Add this to the wort. These extra sugars will make sure to give the beer some extra kick. Once the beer has cooled, you can add the yeast to it. All you need to do now is add it to a fermentation vessel. Be sure to strain out the hops before adding it to this vessel, and be extra sure the strainer has been cleaned really thoroughly! This vessel will need a waterlock. This a contraption that will let gasses out but nothing in. I'm afraid this is the step where you cannot really make something yourself. A 5L fermentation bottle with waterlock will set you back around 10 euros. You can, however, reuse it and thus make beer lots of times!

STEP 6

Put the bottle in a place where there is little light and where the temperature is stable. Around 20°C would be best. The fermentation should take about 2 weeks. The airlock should stop bubbling once the fermentation is done.

STEP 7

At this point, there are two things you can do. Either take the beer out of the fermentation vessel, clean the vessel and put the beer back (make sure the sediment at the bottom gets cleaned out well). Or just leave the beer in the vessel. The first step takes some more time and you need to be careful to clean everything well, but it makes for a much cleaner beer in the end. Either way, you can now add the remaining hops and put the waterlock back on. Put the fermentation vessel back in place for about 1.5 weeks.

STEP 8

Hang in there, the beer is almost done. All we need to do is add priming sugar and bottle the beer! Remember we didn't add all the sugar after brewing? The other 35 grams we will add now. Dissolve it in some boiling water and add it to the fermentation vessel. Now all that is left is bottling. I suggest using the 0.45L Grolsch bottles that have the nice caps. This means you don't have to buy a machine to put on bottle caps! Just put a funnel into the bottle and fill the bottles. Put them away for about 3 weeks in the same place you put the

fermentation vessel and the beer is ready! Now it's time to do the most important thing! Tasting.

This might have been a small batch, but you should be able to make this with everything you currently have at home! All you need to buy is something to let the beer ferment in. Now if you want to scale up a bit, you will need some more things, but to get started this really is all you need. You could also buy a simple starter kit for around 30 euros. Or if the whole grain thing sounds a bit scary, start with a malt extract. The steps are really quite the same but you just start at step 5, so you skip some of the harder things. I would really encourage you to try this one out! It might be a bit of a project, but tasting your own beers after all those weeks is simply amazing and very rewarding. If you have any questions, want to brew together or you have a brewing success story, be sure to send me a message at ruben@bestuur38.nl. I hope to see lots of brews coming by of course! Now for new recipes, I suggest checking out the internet as there are looooots of them out there. Once you get a bit of an idea how everything works, start on your own ideas and beers!

Cheers!



FYC 21-1 THE MEERKATS



PUMBAA! NOT IN FRONT OF THE KIDS!

Starting out as a group of 7 people during the formation meeting, we quickly had to come up with a name. It was a painful thought process and we all worked really hard in the autumn cold, with no distractions whatsoever. Until, finally, our most creative member, Willem, had a genius insight; FYC The Meerkats was born!

TEXT FYC 21-1 The Meerkats

We still can't comprehend how we had all agreed to that name, but we had and meerkats are cute so we stuck to it. Now, you may think we are just some lousy people, but we take the first-year committee pretty seriously and we immediately started assigning the most important roles. Most notably, Roy has become our chairman. He plans our meetings and makes sure the meeting agenda is always up to date. He also keeps track of our FYC points and claims them once in a while on the board. Next up is Jelmer Lap (nickname Lappie), who is our treasurer. Then we have Franciska, who is our secretary and takes care of our minutes and manages our overflowing(!) mailbox. As said, we also have a creative member, Willem. He has become our influencer and manages our Instagram account. Next to that, he is always busy sending us cute pictures of meerkats during our meetings. Banda is our Music Meister and plays the song "Hakuna Matata" at the end of every meeting. Mohamed is our visual designer, he has been really busy with designing our logo and FYC clothes, more about this later. Wout is our author and the main writer of this article.

However, this is not the whole group. During the formation meeting, we figured it would be nice to create a Whatsapp group with everyone and Lappie volunteered to make it. To do it quickly, we started searching for a Jelmer in the general BCS group to send him a message so he could add us. Franciska accidentally sent a message to the wrong Jelmer. At first, it was kinda funny, but when Franciska asked

him whether he would like to join us, he was actually interested. So we arranged it with Wouter and on the same day, we had another member. Now we had two Jelmers, one nicknamed Lappie and the other just called Jelmer, who has become our snack manager. Sometime later, during the one and only physical first-year borrel, Willem and Roy met Tijn. They had some fun and tried to entice Tijn to join the FYC. He said he would only join if Roy did an "adtje" and he did, so now Tijn is a member with the great and appropriate role of beer manager. Unfortunately, Tijn didn't really like Computer Science after some time so he has already started taking courses for his next study, Mechanical Engineering. Still, he remains in our FYC for the time being. Later, Roy and Mohamed also invited two friends, Lora and Djordje, who wanted to join as well, they are mainly focused on planning our activities. Finally, we have two real new members, Kati and Michal. We have already met Kati once and we will probably be as excited to meet Michal as we were to meet her.

With 13 members, we have become the largest FYC as well and since we have three international students, we have introduced a strike system. Every time you speak Dutch during a meeting or online, you get a strike. Our secretary keeps track of this. The one with the most strikes at the end of the year will get punished. We only don't know what the punishment will be yet, but it certainly won't be nice! This ensures that our internationals really start feeling at home.

Of course, there is more to our identity than just our names. We have, for example, created a logo. It has mainly been designed by Mohamed with a bit of help from Banda. We will briefly explain how we got to Kats++. So, just like every other FYC, after a name, you need a logo and Franciska came up with this brilliant idea, as follows: almost every programming language uses '++' to increment a variable by 1. So in general, you get more of what you had before, so we want more kats. Finally, 'more' translates to 'meer' in Dutch, append this to 'kats' and you get meerkats! After that, Mohamed started designing it in Photoshop and here it is!



We printed our logo on our own stickers, so if you want one, just ask a member. Our logo can also be found on our characteristic yellow sweaters and we wanted to wear those to as many borrels as possible. We even planned to always stand straight up and look around for a minute like a meerkat does before entering the bar. However, that has all become impossible, unfortunately. Still, we have had some pretty fun times online, such as at the "GELIMBO Escape Experience". The team with Willem and Roy needed a time of 2 hours 32 minutes and 36 seconds, the longest of all. Lora, Mohamed and Djordje did it a bit quicker in 2 hours and 5 minutes even though they had one teammate missing. Some of us also participated in the "Get To Know Your First Year's Online Borrel", where we also got to know the BAC and other GEWIS members. Especially Willem had a good time because

he and a friend of his had iced each other. Later, when Sinterklaas and Christmas came around our FYC also received a present from the BAC on behalf of Sinterklaas containing a mysterious package, which when shaken made an annoying sound. We decided to vote on who should open it. It was a neck-to-neck race between Roy and Willem, but in the end, Roy had to open it. You would have never guessed it, but it contained a can of ICE and Roy had to "adt" it. Although he wanted us to vote to begin with!

The GEWIS Christmas dinner came around as well, together with a music bingo. Mohamed, Djordje and Willem teamed up, Banda and Wout joined Roy in his dorm and Franciska went to some of her double bachelor friends. It was in general a nice evening and +1 to the chef. None of us won the bingo either, but afterwards, when the more festive music started playing, we all started to dance and tried to entice as many other groups as possible to join us. Mohamed, Willem and Djordje were playing a lot of Uno that evening as well, with as a highlight that Mohamed had to draw 12 cards and cried out before the camera. Djordje also got really uncomfortable when Mohamed and Willem helped cleaning up because he isn't used to guests helping to clean.

For the future, we are looking to organise an activity. Perhaps we will see you there, but for now,

Hakuna Matata





LIFE AND WORK OF A DOCTORAL STUDENT

First of all, let me wish you all the best in the new year, dear reader! My name is Wouter, and I am a third-year doctoral student in the Centre for Analysis, Scientific computing and Applications (CASA), here at TU/e. I have been asked to write about my PhD life for *Supremum*, which of course I gladly did!

TEXT Wouter Scharpach

I have studied Mathematics here at TU/e, and during my last year of study I started looking for a doctoral position. I did this for multiple reasons, the most important one being that I wanted to extend my time of studies before going to industry – or staying in academia, as one needs a doctoral degree for that too! Furthermore, I enjoyed working on larger projects, like the final project for my Master's degree. I expressed my interest in vacancies for doctoral positions at various locations, both inside and outside the Netherlands, – but I also stayed tuned for available positions here. I had known this place, its people and atmosphere for some time, and would be guaranteed of a nice time if I stayed here! When I was given the opportunity to apply for a position in Björn Baumeier's research group, I decided to take it. An important reason for doing so was that this research group, which

focuses on the development and application of simulation approaches for the study of complex molecular materials, is interdisciplinary: the research does not only comprise mathematics, but also quantum chemistry, molecular dynamics and software development. (For more information, you can visit <https://www.baumeiergroup.com/>) This idea of interdisciplinarity was what spoke to me, since it seemed that my projects could both be of a mathematical and more theoretical nature and may be interesting and relevant to a wide audience of various disciplines, so that they might serve a broad range of possible applications. In this large field of research, I also have been given a large amount of freedom when it comes to choosing (new) directions that I find interesting, which I very much appreciate!

Currently, together with my collaborators, I investigate the existence, with or without uniqueness, of solutions to a system describing the dynamics of a molecular system in a certain model. In this model, the electronic dynamics are described by the "time-dependent Kohn-Sham equations", which constitute an approximation of the Schrödinger equation for the wave function ψ , which induces the "Kohn-Sham density" $\rho = |\psi|^2$. We can couple these quantum-mechanical equations with classical-mechanical equations for the nuclei x , obtained via Newton's second law of motion. Eventually, this gives the following coupled system of equations:

$$\begin{cases} i\dot{\psi} = H[x, \rho]\psi, \\ m\ddot{x} = F[\rho](x). \end{cases}$$

The operator H induces an approximation of a description of the electronic dynamics, and is of the form

$$H[x, \rho] = -\frac{1}{2}\Delta + V_1[x] + V_2[\rho].$$

Here, V_1 is a potential in x , corresponding to the Coulombic interactions between the nuclei and the electrons, and V_2 is a potential in ρ . Inspired by the "Local Density Approximation" model, we studied a

class of possible potentials V_2 , depending on parameters $\lambda \in \mathbb{R}, q > 1$:

$$V_2[\rho] = \rho * |\cdot|^{-1} + \lambda\rho^{q-1},$$

with $*$ denoting the convolution. For the resulting system, we proved that under certain assumptions on the parameters (λ, q) , there exists a time interval $[0, \tau]$ on which existence and uniqueness holds for the solution (x, ψ) in a space where $\psi(t)$ are functions in the Sobolev space $H^2(\mathbb{R}^3)$ for all $t \in [0, \tau]$. As it happens very often, this result gives many new starting points for further research. An example of a new research question is whether we can localise the wave functions $\psi(t')$ in other spaces, like the Sobolev

space $H^1(\mathbb{R}^3)$, under different assumptions for the parameters, in order to obtain a similar result for a different time interval $t' \in [0, \tau']$. Under less restrictive assumptions on (λ, q) , we hope to enlarge the class of admissible potentials $V_2[\rho]$, so that the corresponding operators $H[x, \psi]$ give a better description of the electronic dynamics. Another interesting research question would be: What could be the time behaviour of the solutions beyond the mentioned time intervals? We can investigate whether existence without uniqueness holds on a bigger interval, and whether beyond this time a "blow-up phenomenon" occurs, in which the solution goes to infinity in the norm of the localised function space.

To me, "long-time behaviour" is a work-related concept in more ways than that: the other, epidemiological way will sound familiar to all students and employees of the TU/e. The pandemic, together with the long-time human crowd behaviour, influences everyone's individual work behaviour in a similar way. My work behaviour had been repetitive and consistent before already: every working day, I went to work in my office, and I never worked at home. Now, this has been reversed, and I feel like a student staying at home out of necessity. You will undoubtedly recognise this image, and I am sure that you, together with me, lament this work / study situation. During my studies, I always enjoyed working together with fellow students on campus, both during and outside class hours. This way, we could help each other understand the study material, and double-check whether we understood it ourselves. I think this way of studying is still quite customary amongst the students.

In my educational tasks as an instructor, which I really enjoyed, I also liked to think along with the students and help them with their questions individually. This contact was beneficial in more ways than just socially: if you learn to know people better, you can support them better in their process of understanding the material. Everyone thinks in a different way, of course. This academic year, for one course the instructions I gave also had to go online; but since the amount of

students was low enough, I could divide them into groups of four over the instruction hours, in order to not have to divide my attention too much, and so still be able to help everyone as individual as possible. This way, I could mimic what I did on-campus best, and keep track of every student as best as possible. I surely enjoyed this interaction, and I think those "social hours" helped both the students and me through a difficult time for everyone.

Of course, I also enjoy meeting with colleagues, whether it is on social activities, at the coffee machine, or in front of the laptop, – as now often is necessary. Whether this is for giving or asking help, or just for some conversation: it has always helped me in my work. A nice atmosphere is always stimulating, and just talking about my challenges already helps me in reducing stress and insecurities. Due to the current circumstances, the social activity has been reduced; you now really have to make appointments with people in order to find it. For one of my collaborators, Carlo Mercuri, the situation was even worse, as he just had travelled from Swansea to Eindhoven for a sabbatical here and had been here for a few weeks, when the Netherlands went into a lockdown. We were just getting deep into the project we were working on, when we suddenly had to proceed our communication via video connection – in spite of us both being in Eindhoven.



Centre for Analysis, Scientific Computing and Applications

Handwritten mathematical notes:

- Venn diagram with sets A and B, elements 1, 2, 3, 4.
- $k(n) = \frac{n!}{(n-k)!}$
- $b^n = \binom{n}{0} a^n b^0$
- $\lim_{n \rightarrow \infty} a_n = a$
- $(A \cap B) = P(A) \cdot P(B)$
- $\lim_{n \rightarrow \infty} \frac{a_n}{b_n} = \frac{a}{b}$
- $\lim_{n \rightarrow \infty} \frac{a_n}{b_n \log a \sqrt[n]{r}} = \frac{1}{s} \log a r$
- Polynomial: $y = a_m x^m + a_{m-1} x^{m-1} + \dots + a_1 x + a_0$
- Probability: $P(A|B)$
- Product of roots: $\sqrt[n]{\prod_{i=1}^n z_i}$
- Graph of $y = x^2$ with points at $(-1, 1)$ and $(1, 1)$.

Me talking about how the current situation complicates life and work is not very surprising, nor interesting. There are many positive sides to my work: I have been, and still am, very lucky with my collaborators; especially with dr. Baumeier and dr. Mercuri. I now still have frequently very nice and helpful chats, on both a professional and a social level. Especially in these times, I find this very important; certainly with Carlo. From the beginning of the lockdown until the summer recess, I had very frequent video contact. We had a good starting point, due to the work we had done on-campus, and our good collaboration, which still continues, was and is a very nice incentive to have!

There are many things that could be drawbacks for you in pursuing a doctoral trajectory. For example, I am not great in dealing with the pressure of wanting to do things right, and feeling uncertain about things as results or possible directions to pursue, – and the pandemic makes these matters only worse; the same of course also applies to studies. But this can also be viewed as an on-going challenge you undertake: and when you persevere in this, the achievement eventually makes it worthwhile! Along the same line, if you would like to pursue a PhD, yet you do not, for whatever

reasons, that could certainly be something to regret later. To me, motivation and perseverance seem to be the key ingredients. Concerning external factors, it is of course very nice to have a good connection with your supervisors, collaborators and colleagues, since they can support you in your work. If they let you have a certain amount of freedom in your work, this can stimulate your motivation and interest, and affinity with the study matter. These are things to look out for when you are in search of a nice position; do not try to look too much into yourself, searching for flaws or other possible drawbacks.

If you are interested in the research I wrote about, you can read the following preprint on arXiv: <https://arxiv.org/abs/2011.10542>. Of course you can contact me for more information concerning what I have written about: you can reach me on w.l.j.scharpach@tue.nl!

If you have reached this part, this means (this article on) my life has been interesting enough. Great! I wish all readers all the best in these, in multiple ways, darker times, in good health. Good luck in your studies, and see you around!

HI THERE!

Net uit de collegebanken en binnen vijf jaar een volledig nieuwe digitale verzekeraar bouwen. Een droom? Nee hoor, een Hi There avontuur. In dit artikel vertelt Florentijn Hogerwerf, 28 jaar oud, meer over dit avontuur.

TEXT Florentijn Hogerwerf

FLORENTIJN, HOE BEN JE IN DE SOFTWARE WERELD TERECHT GEKOMEN?

Ik heb econometrie gestudeerd in Maastricht en na het eerste programmeervak tijdens mijn studie had ik al snel door dat dit mijn echte passie was en dat dit mijn toekomst moest gaan worden! Mijn interesse ging vooral uit naar het opzetten van Cloud-systemen.

HOE KWAM JE MET HI THERE IN CONTACT?

Al tijdens mijn afstuderen kwam ik in contact met Hi There, wat zich razendsnel aan het ontwikkelen was, maar kampte met één probleem: onvoldoende computerkracht. Om alle berekeningen snel uit te kunnen voeren zou Hi There namelijk over forse mainframes moeten beschikken, maar daar was simpelweg geen geld voor. Het leuke was dat juist mijn grote interesse, Cloud systemen, de perfecte oplossing bood hiervoor. Deze systemen zijn namelijk veel sneller en goedkoper dan de bestaande mainframes. Ik besloot om deel uit te gaan maken van het Hi There-team, met als uitdaging: De Hi There software verder ontwikkelen en naar de Cloud brengen. Dat lukte ons binnen twee jaar!

WAT ZIJN VOOR JOU DE HOOGTEPUNTEN GEWEEST BIJ HI THERE?

Nou, ik denk de erkenning die we van grote partijen gekregen hebben. Zo ben ik er nogal trots op dat we na het door ontwikkelen van onze software werden uitgenodigd om in München – het Mekka van de internationale verzekeraars – ons product toe te lichten. Hier mocht ik dan samen met een collega voor een zaal met 1000 toppers uit verzekeringsland ons

verhaal doen en live laten zien hoe Hi There werkte. Dat we vervolgens gerangschikt werden bij de 50 beste Insurtechs ter wereld en dat Microsoft aanbod om ons op te nemen in hun ScaleUp programma had ik aan het begin van de rit nooit durven dromen.

Onder de hoogtepunten vallen ook de andere internationale ervaringen. Zo kwamen private equity partijen Athora en Blackstone eerst bij ons in Heerlen op bezoek om te kijken hoe we eigenlijk voor elkaar kregen wat we gedaan hadden, om vervolgens ons uit te nodigen in Londen. Zo kwamen we zomaar bij een van de grootste investeerders ter wereld op de koffie, iets wat niet iedere dag voorkomt. Daarnaast zijn we nogmaals in Londen geweest om een samenwerking met één van de big four consultancy-kantoren te smeden.

Dit zijn hele mooie herinneringen, maar toch geloof ik dat de echte hoogtepunten in het vooruitzicht liggen. We zijn nu bezig om met een van de grootste softwarehuizen ter wereld een alliantie te smeden en zo ons aanbod op te schalen om ook aan de vraag van de grootste partijen te kunnen voldoen. Buiten deze alliantie breidt ons kleine clubje zich ook steeds meer uit en zijn we blij te vermelden dat de studenten Rens en Lisa van de TU/e ons sinds 1 februari ook zijn komen versterken en de Hi There uitdagingen mee aangaan!



CO-MPANY



MEMBER

SERPENTINE

THE STUDENT TEAM COMPETING IN AI PROGRAMMING CONTESTS

Hi there! My name is Bram Grooten, and I am the chairman of Serpentine this academic year. It is my pleasure to tell you a bit about the ins and outs of our young association. For about two years we have been participating in all kinds of eSports competitions by developing bots with artificial intelligence. In this article I'll show you how we do it by going through the four elements of our mission: Discover, Develop, Compete, and Contribute.

TEXT Bram Grooten (chairman of Serpentine)

DISCOVER

At Serpentine we love to learn more about all the algorithms that might be useful to us. On our own wiki (apple.serpentineai.nl) we have multiple pages about reinforcement learning methods such as Q-learning, imitation learning, policy gradient and the more rule-based algorithms like minimax, alpha-beta and Monte Carlo tree search. We apply these methods to basic environments from OpenAI to get a better understanding.

New members can teach themselves useful machine learning, Git, and programming skills using the education tracks which have been set up last year. Our Education Committee has built a rule-based track and a machine learning track, both consisting of about 10 lessons. In the first track members use Python to write an algorithm that can play the game Pommerman, a research variant of the famous Bomberman. The second track is all about learning the basics of machine learning implementation, where you will use the PyTorch and TensorFlow frameworks.

DEVELOP

After we have discovered various methods, we adapt them to our needs or develop new algorithms ourselves. If you're a first-year student, you might have played against our AI Snakes bot during the introduction week. This contained a smart circling algorithm which we came up with, making it almost unbeatable.

The biggest challenge we are currently working on is Rocket League. In this popular video game rocket-powered cars play soccer in matches of 1-4 players per team. We have a group of 15 developers working on this project right now, making it the biggest subteam of our association of 40 members. Our goal for 2023 is to beat the professional Rocket League players of Zephyr with our AI in a direct match, something that no algorithm is able to do yet.

Our Rocket League team has set up a neat structure to organize the code, using so-called coaches, captains, and players. The coach determines the high-level strategy, the captain turns this into specific tasks, which the players then execute. The first version of our code is officially added to the Rocket League bot pack, so you can play against our "RocketNoodles" by installing it via rlbot.org.

As you can imagine, there is still a lot of work to do. We are always open to new members who would like to dive in, or even do this as a Bachelor Final Project. If you're looking for a BEP and think this is a cool idea, definitely let us know via info@serpentineai.nl.

COMPETE

Now Rocket League isn't the only challenge we're working on. Serpentine competes in many international AI programming contests. We've actually won two competitions already! One was hosted by FruitPunch AI in 2019, the other was part of the IEEE Conference on Games 2020.

In this latest competition the goal was to make an AI that could generate levels for the game Angry Birds. The levels needed to be fun to play, aesthetically pleasing, and somewhat challenging. A panel of judges looked at a couple of levels from each generator, and decided on the outcome. While our team of 5 developers was going mostly for the aesthetics, we actually won in the challenge category!



The second project is based on the popular game Among Us. Using data from many games played by humans all over the world, we are trying to make an AI that can detect the imposters. Our team uses algorithms in the field of Natural Language Processing in order to classify the role of each player.

Battlecode is another exciting competition which we just participated in for the second time. This contest is organized by MIT every year in January, where about 500 teams of at most four people take part from all over the world. In 2021 we collaborated with the honors track Competitive Programming and were able to form 3 teams!

CONTRIBUTE

When we have submitted our code to a certain competition, we start to make our documentation ready for publication. The group of developers gets

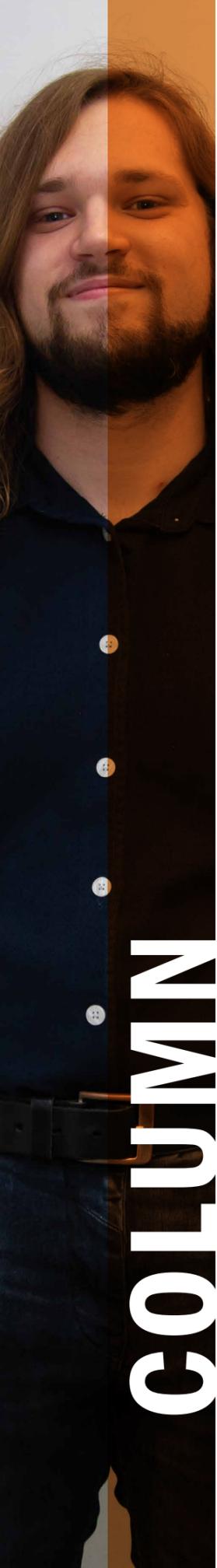
Currently we are working on two projects next to Rocket League. The first one is called General Video Game AI. The tricky thing about this contest is that the code has to be able to play multiple maze-like games with some known and unknown levels. Therefore, we need to make an AI that can generalize well and learn quickly, to get as many points as possible.

together and writes a technical report about the strategies they came up with and the algorithms they used. We publish these on our website, with links to the open source code: github.com/TeamSerpentine.

We like to contribute to the AI community in different ways. For example, we've built a demo to confront people with the possibilities of real-time deepfakes. We think it is important to remind ourselves of the ethics that are involved in the creation of this technology. Take a look at the demo here: youtu.be/YzAFLQynM9c.

Serpentine is both a student team and an association, and we believe this gives us the right ingredients to continue contributing to AI for a long time into the future. If you feel excited about implementing AI and like to learn by doing, join us at next week's team evening: serpentineai.nl/visit.





ONLY IN ICELAND

For some inexplicable reason, during the Covid pandemic, my brother and I have been brewing ideas on going on a holiday together. It is however quite difficult for the two of us to agree on a definite travel destination. I would love to see some parts of Asia, whereas my brother enjoys the convenience and the ambience here in Europe. We have been able to devise that we do have a shared interest in a country which we'd like to visit: Iceland. And let's be honest, the idea of fresh dark rye bread, the view of cliffs inhabited by puffins and the scenario of having my face blown off by a geyser have me smirking as I am thinking about it. But if I were to list the most interesting things of Iceland I certainly must not forget about including Björk.

TEXT Lars Verstraelen

I encountered her music for the first time about a year ago. I can even exactly recall me walking through Matrix when all of a sudden, as I was listening to my Discover Weekly list, a song appeared that was not some complete incoherent trash for a change. 'Human Behavior' pumped through my €3,- earbuds and I immediately fell into a very magical world. The music made me feel as if I was walking through wonderland. It had a very tribal and natural tone; almost dissonant at times and maybe even off-tone for a few moments, which however only added an extra sense of naturalism. Accompanied by an insanely brilliant video clip of Björk also walking through the woods portraying Goldilock, encountering bears and sitting in a house eating porridge. There have been few moments where an artist made such an astoundingly good debut for me. The encounter was thus enough to convince me to listen to the rest of her first record: debut.

After the brilliant commence of 'Human Behavior', Björk adds a bit more dance into the mix with 'Crying'. The song contains a very uplifting vibe, one which you can definitely sway to. I immediately noticed my feet tapping the ground when first listening to it. It must be noted that you can very well identify Björk's music: Once again the song is quite antitypical in its structure. Choruses appear when not expected and

the melody choices are quite extravagant. Lyric-wise Björk is also pretty much on her own. She explains in her own way how she deals with a breakup: going out, travelling, but still crying. 'Venus As A Boy' continues the ongoing strangeness. It is a bit of a safer song compared to the previous one musically, but more challenging lyrically. The instrumentation is very pleasing to listen to, using various Indian instruments but still laid out over a very synth-and-timpani-driven instrumental section. The lyrics are quite mystic; explaining how one can see beauty not only superficially and appearance-wise, but also in a way in which life can be appreciated. Beauty can also be intrinsic to the little things, like dining with your loved one, or waking up to him or her in the morning.

Björk is not ashamed to admit that 'There's More To Life Than This' is merely recorded in the bathroom stalls of The Milk Bar in central UK. The song itself is a very easy-going dance-song: a simple beat, dreamy lyrics and some very interesting flute sections, but nothing to be attentive about when dancing in the club. It is however strange that during the song, you can actually hear stall doors closing, damping the instrumental section of the song. All of a sudden the music is gone for 80%, but Björk's voice is kept at the same volume, still making this song worthy of putting on a record instead of just keeping it as a separate live

recording. With 'Like Someone In Love', Björk enjoys screwing with the audience's mood swings. It is a way more confined song – harps constructing the entire instrumentation of the song, over which Björk expresses the feelings of someone... well... in love. The generally soothing voice that Björk lets you listen to is sometimes abruptly switched with very harshly articulated sentences to wake you up when you desire it the most during this song.

The danceable happiness is once again ushered in with a song like 'Big Time Sensuality'. It has this very cool 8-bit vibe to it, supported by a very funky drum pattern and jolly synth sections. It should come as no surprise that the instrumental section is still showing some intentional defects. The whole song is in F# major (basically the music sounds very uplifting and happy), whereas the bassline provides a few nasty dissonant tones. In essence, it's what you should accompany a song about one night stands with; the fun mixed with the somewhat dirty-flirty. 'One Day' is a beautiful song with a very multifaceted lyrical intent. The person singing either wants to comfort someone going through a hard time or she wants to say to her child that 'one day' he or she will grow up and understand the world (something that even some of us still have a great deal of difficulty with). It is an easy-going song as it has a nice flow, an exciting buildup and the vibe and sound is very easily acquirable.



But oh my, do the vibes turn around with the entrance of 'Aeroplane'. The song starts with a very cool wind band but very quickly switches to a very tribal vibe accompanied by xylophones. I really felt like walking through a jungle when listening to this. Sometimes the brass section kicks back in, returning you to a little jazz club... in the jungle still. Björk hints back to

'crying' here, as she is wondered by how much one person can belong to her and make her feel complete – something she has trouble dealing with. 'Come To Me' is the complete opposite: ensuring someone of the love that you have for your significant other is a message that you hear clearly resounding throughout the song. The music could as well be music for a film: you can very easily imagine the appropriate scenery the song conveys in something like a Bond movie or a French 'femme fatale'-movie. Interesting, but not very exciting if I must be honest.

'Violently Happy' however makes me very excited once again. It is mostly dance-oriented, but very violently (no pun intended). The beats and the melody really hit you more than previous songs in a very forcible manner. There is a strong chorus over the voice and other heavy effects throughout the song. Despite its forceful outing, it is still a song that really gently introduces itself. It reminds me of German club music; powerful, a lot is happening and you cannot keep yourself from dancing. The album closes with 'The Anchor Song'; quite possibly one of the best songs I have ever heard. It is so incredibly simple: a sea-shanty-esque synth -and brass section being the sole source of melody from the instrumental section, switching with Björk's vocals. It is the fact that every little instrumental part is ever so slightly different from the previous one which makes this so musically interesting. The vocals are outright incredible but once again quite easy. I am still contemplating as to whether the song is about a sailor man or an anthropomorphized anchor. Either way, it is brilliant and a really satisfying finale of her 'debut'.

If you need to take one thing away from this it's that Björk loves to challenge both herself and the listener musically. The compositions are quite uncommon and the lyrics are also not standard. It is as if you can hear the isolation of Iceland as an island, but transformed into a record. Let's just say that being separated from the mainland also makes Björk pretty much separated from other artists, in a very unique and beautiful way.

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Cover art of 'Debut' by Björk



MIRROR MIRROR ON THE WALL, WHAT IS MOST BEAUTIFUL OF ALL?

In this article, I will briefly present my research on computational illumination optics, which is a collaboration with Wilbert IJzerman (Signify), Martijn Anthonissen and quite some students. The numerical simulations for this article were performed by Lotte Romijn. Computational illumination optics is a virgin territory in the mathematics community, offering a lot of possibilities for cutting-edge research at all levels (BSc, MSc and PhD). So students, if you feel challenged, don't hesitate to contact me. Currently, we are expanding our research to optical systems for photolithography, in collaboration with ASML.

TEXT dr. Jan ten Thije Boonkkamp

In the lighting industry, a revolution took place. Traditional light sources like incandescent bulbs are replaced by light-emitting devices (LEDs), mainly because these are much more energy-efficient and have extremely long lifespans compared to traditional sources. Moreover, LEDs produce high-quality light. However, LEDs require an optical surface (reflector/lens) that converts the source light distribution into the desired light output.

The design of optical systems is quite a difficult task and requires many years of experience. Alternatively, numerical simulation methods can be used for optical design automation. The classical method is ray tracing. For a given optical system, one computes the paths of a large collection of rays, subject to reflections and/or refractions, from source to target. From the distribution of rays in target space, one can compute the target distribution. Most likely, the computed light distribution is not the same as the desired one. Therefore, we modify the geometry of the system and redo the computations. This (iterative) procedure has to be repeated until a satisfactory approximation of the desired target distribution is obtained. Recently, we have developed several improved versions of ray tracing.

Ray tracing is an example of a forward problem, i.e., given the source distribution and the layout of the optical system, the goal is to compute the light output.

Alternatively, we have developed several inverse methods for optical design, where we compute the shape of an optical surface, given the source distribution and given the target distribution that we want. So, we compute the optical surface in one go and, thus, no iterations are required.

To give you a flavour of our research, consider the following optical system. A point source located in the origin is emitting a conical bundle of light radially upward with intensity (roughly speaking power per solid angle) f . The rays hit a lens and are refracted, creating a new bundle that should have intensity g . Assume one lens surface is spherical and the other one is freeform, parametrized as $\mathbf{r} = u(\phi, \theta)\hat{\mathbf{e}}_r$. The question simply is: what is v , i.e., what is the shape and location of this lens surface such that the input source distribution f is converted to the target distribution g ?

Our mathematical model is based on geometrical optics, describing light propagation in terms of rays. The two main ingredients are the so-called optical map and energy conservation. The optical map defines a ray connecting source to target and is typically of the form $\mathbf{y} = \mathbf{m}(x, u, \nabla u)$, where x and \mathbf{y} denote the coordinates on the source and target domain, respectively. The energy balance takes the form $\det(D\mathbf{m}) = F_1(x, \mathbf{m}(x))$, where $D\mathbf{m}$ denotes the Jacobi matrix of \mathbf{m} .

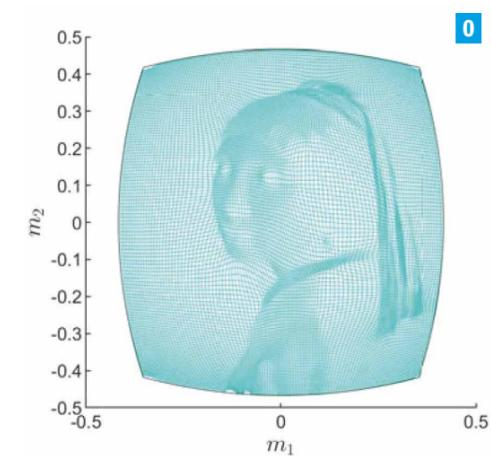
Combining the two gives rise to an equation of the form

$$\det(D^2v - \mathbf{C}) = F_2(\mathbf{x}, \mathbf{m}(\mathbf{x}))f(\mathbf{x})/g(\mathbf{m}(\mathbf{x})),$$

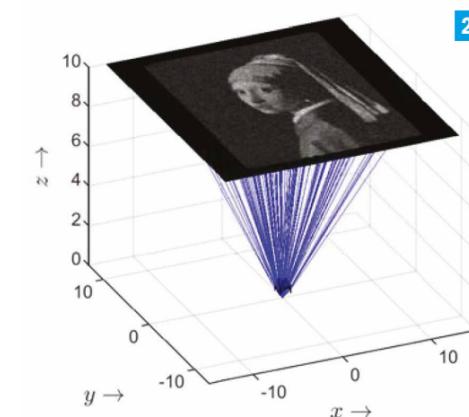
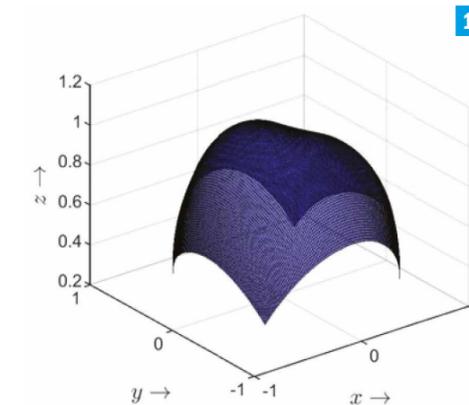
where D^2v denotes the Hessian matrix of the variable $v(\mathbf{x}) = \log(u(\mathbf{x})/(1 + |\mathbf{x}|^2))$. The equation above is a fully nonlinear elliptic partial differential equation (PDE) and is very hard to solve.

Our solution procedure is a two-stage least-squares algorithm. In the first stage, we compute the optical mapping, and subsequently, in the second stage, we compute the location of the lens surface. This method involves sophisticated numerical methods, in particular, to solve PDEs. To demonstrate the potential of our algorithm, we have computed a lens that converts a uniform source distribution in a target distribution corresponding to a grey-scale image of the painting 'Girl with a pearl earring' by Johannes Vermeer, projected on a screen. In Figure 1 you see the mapping, and the corresponding lens in Figure 2. To validate the result, we have ray traced the lens, resulting in the light distribution depicted in Figure 3. Clearly, with our method, we can compute optical surfaces that can create quite complicated intensity distributions, making it a powerful tool for optical design.

Finally, the question remains, what is most beautiful of all in this research? Well, that is for you to decide if you accept the challenge. For more information, see <https://www.win.tue.nl/~martijna/Optics/>.



0
Optical mapping
1
Corresponding lens
2
Ray trace result





FYC 21-3 GELØL

“ *L*idt øl gør lystig!”, our beautiful Danish motto. It roughly translates to “a little beer makes merry.” A wise and ancient expression, bound to be upheld by our esteemed members. The Danish gods have not been easy on us and challenged us to uphold our alcoholic ways whilst still socially distancing. Why Danish, you might wonder. That is because of the glorious heritage of our FYC name GeLØL. One might assume that GeLØL originates from the word lol, but no that is not the case. It is from the brilliant Dutch word GeLUL (which is the word ‘banter’ in Dutch) which sadly did not get approved. Therefore we added a little bit of spice and exchanged the U for an Ø. From there on the magnificent legacy of GeLØL was born.

TEXT FYC 21-3 GELØL

Hi, we are FYC 21-03 GELØL! We are an international first year committee that wants to promote communication and engagement between both international and Dutch students. Currently, we have a total of ten members. Most of the members met one another in the introweek, where we were in the same group. After finding some other enthusiasts during the formation meeting, our FYC was founded.

WHAT'S BEEN KEEPING US BUSY?

Even during these hard times, we've managed to keep busy. We've had meetings, celebrated birthdays and participated in online borrels together. Online, we've been bonding over our love for games and movies, resulting in online movie nights (where we watched classics such as the Spongebob Squarepants Movie) and game nights. We even managed to get together for a Christmas lunch on campus, with the regulations in mind. We shared the merry holiday spirit, delicious food and gifts with each other.

KEEPING UP WITH THE OTHER FYCS

Since it's hard to meet up with other FYCs at GEWIS, we decided to still get to know each other on the FYC Discord channel. Here we've had online borrels, celebrations and even speeddates. Not being busy enough, preparing for the finals, we decided to open an FYC Minecraft server, where we could spend even more time together. This has resulted in many happy

memories, such as the first official FYC Minecraft marriage between our secretary and chairman. This was a big event on the server that brought us all together.

GELØL'S FAVOURITES

Food

- » Tomas's hamburgers
- » Çiğköfte
- » Künefe
- » Oliebollen
- » Kapsalon

Drinks

- » AH Lager
- » Hooghoudt Passion Likorette
- » Jort's cocktails

Music

- » Beetje Moe by Kevin, Lik Kleine and Chivv
- » Fancy by Iggy Azalea and Charlie XCX
- » Money Machine by 100 geecs
- » WAP by Cardi B and Megan Thee Stallion
- » Take On Me by a-ha

Movies

- » The Spongebob Squarepants Movie
- » Howl's Moving Castle
- » Tenet
- » De Film Van Dylan Haegens
- » The Prestige



FYC 21-3 GELØL

GETTING TO KNOW GELØL

Ilse (Mommy)

Ilse is the chairwoman of GeLØL. She is from Groningen and we consider her as the glue of the FYC, bringing everyone together. "My favorite moment we spent together has to be when we had the afterborrel concluding our Christmas get-together. It was so nice to see everybody enjoying each other's company and bonding over some good music and food, laughing the night away."

Sinem (Grootste Speler)

Sinem is the secretary of GELØL. She comes from Turkey and she always ensures that everybody feels comfortable and is having a good time. "One of my favourite moments is when we met up to have a Christmas lunch and everyone was talking and laughing with each other while I was preparing çiğköfte (a turkish dish) and fed everyone."

Milo (Excel-Senpai)

Milo is the treasurer of GELØL. He is from Enschede and he is always there for our members to get away from the lunacy that arises during meetings and get-togethers. "It is difficult for me to pick my favorite moment with GELØL, I enjoyed seeing them after the on campus instructions that we have had. I can also not forget to mention the Christmas party we had (with way too much food) and the get-together after the Christmas dinner. But most of all, I look forward to making many more great memories with them."

Casper (Daddy)

Casper is the vice-chairman of GELØL. He is also from Groningen and helps Ilse with making decisions, so the FYC can properly function. "I can't say my favourite memory so far is of solely an activity. What I really appreciate is when we just happen to see each other and hang out and chat. Those casual moments are what I can most enjoy about the FYC."

Marlou (Precious Queen)

Marlou is one of the newest additions to the FYC. She is a true local, but still goes out of her comfort-zone to try out new things with the other members.

"Although I joined the FYC later, meeting the members was the best thing that happened in 2020. I really enjoyed our get-togethers where we chatted, ate food and had drinks."

Maiko (Jort's housewife)

Maiko is in charge of our merch and logo designs. He is from Belgium and we consider him as the entertainer of the group, whether it is introducing us to new games or playing music at our get-togethers. "My favorite memory is when we had a get-together at our place. We were bonding over music, kapsalon and alcohol! We introduced Sinem to the kapsalon and I believe she enjoyed it! We had a great time."

Jort (Maiko's homemaker)

Jort is the inventor of our FYC name. He is from Rotterdam and he is known in the FYC for preparing some banger drinks. "What I really like about our FYC is not just one moment in particular, but also being able to hang out with a great group after our tutor sessions, where banter and culture is exchanged. It's a great place to land when starting uni. 10/10, would recommend."

Cas (Bierbrigadier)

Cas is in charge of our FYC's social media. He is from 's Hertogenbosch and always makes sure that there is enough beer being chugged during our get-togethers. "What I really like about GeLØL is that everybody is really active in the FYC. We try to do a lot of corona safe get-togethers and those get-togethers are always really fun :D"

Poyraz (Smooth guy)

Poyraz is the newest addition to the FYC. He also comes from Turkey and when hanging out with other FYC members, he brings coziness to our get-togethers by playing songs for us.

Tomas (Happy Camper)

Tomas is in charge of time-management within the FYC. He is from Slovakia and is often late, but the party only starts when he arrives.

Infimum: A strange or funny quotation from a teacher, a student or faculty member. Here you can find infima sent to the Supremum committee via inf.gewis.nl.

Sjoerd: "Wat een haat over Taco Bell."

Lucy: "Ik heb eigenlijk nog nooit Taco Bell gegeten."

Sjoerd: "Ik ook niet."

Wouter: "Hoe heb ik deze sok aangedaan?!"

Max over Tinder: "Ik weet wel welke kant ik zou swipen. Oh nee, ik weet niet welke kant wat doet."

Tijdens de online kroegentocht van GELIMBO

Maureen: "Ik irriteer me echt aan hoe je carnaval uitspreekt!"

Pim: "Hoezo?"

Maureen: "Het is vasteloavond!"

Rink: "Nee ik wil geen babys, ik wil ze dood!"

Jealy: "Heey Floris, dit is Jealy. Ik kom jouw pakketje voor de Optiver Business Case vanavond afleveren!"

Floris: "Sorry, ik denk dat je het verkeerde adres hebt. Ik heb niets besteld."

Anne: "Ha, die politieauto rijdt op de busstrook!"

Ruben: "Oh shit, wij ook!"

Hard aan het werk voor SEP

Rink P: "Waarom is 28 lager dan 27?"

Samuel: "Je bent te klein voor business-casual, dus moet je maar gewoon volledig business gaan."

Tijdens de FYS pubquiz

Wouter: "Waarom zou Neil Armstrong en de Apollo 11 crew een ster op de Hollywood walk of fame moeten hebben?"

Rink: "Omdat de moonlanding staged was, duh."

Rink P: "Haar hoofd moet dan in full color, dat is wel heel duur."

Rink P: "Gelukkig is haar persoonlijkheid wel zwart-wit."

Teun: "Ik ga nog 30kg aankomen, dan trek ik een pantalon aan en dan kan ik echt goed darten!"

Pim: "Zijn jullie aan het haken of punniken ofzo? Oh wacht, jullie zijn aan het eten."

Irne: "Mensen die een consti overleven zijn echt stom."

Dick: "Gebruik Shift-Tab-Tab"

Banda: "Maar Dick, ik heb maar één Tab."

Chantal: "Ik heb een roos gehad, jij ballen en jij een paar lippen."

Susan: "Waar vind je ook alweer dat die persconferenties plaatsvinden?"

Lieke: "Op die nieuwssites, van het NOS jeugdjournaal enzo."

Hondehaar: "Max luister gewoon naar wat ik zeg en ga niet zelf nadenken."

Kees: "Hey Google!"

Google Home: "Wat kan ik voor je doen?"

Kees: "Hij luistert ook naar mij!"

Google Home: "Ik speel album Luister Naar Mij af op Spotify."

Tijdens SudoSOS werksessie

Roy: "Als je lastige code van Kevin ziet die je niet begrijpt moet je het gewoon commenten, dan werkt alles weer."

During a class on JavaCard programming

Teacher: "If your code does not look horrible, it is probably not correct."

Lecturer: "With an index out of bounds in C, anything can happen, like the end of the world, which may be good because then we get rid of buffer overflows."



STRIVING FOR SUCCESS IN SWITZERLAND

The start of my adventure in Switzerland leads us back to November 2019. It was my first foreign business experience, and for me it was immediately clear that it was a business trip. I gave a small goodbye party on Sunday, because after all, I was going to travel abroad. Even though during these drinks I realised that I would be in Switzerland only 12 hours later, it was very surreal to also realise I would be back in Eindhoven only 48 hours later.

TEXT Tim Meeles

This first trip in November was merely meant to get familiar with our factory in Trübbach, in the Rhine Valley in Switzerland, next to the border with Liechtenstein. Furthermore, we formulated the assignment I was supposed to start working on in January, for the next three months. After arriving in Zürich, while travelling by train to Sargans, I immediately noticed I was travelling from the lake surrounded, largest city of Switzerland, known for the world famous Swiss banking life, to the less densely populated Alps region. This specific train ride is recommended to all readers, travelling along several lakes, surrounded by mountains. When continuing this ride into the southern regions of Switzerland, you see many of the Windows backgrounds, so to say.

I remember one of my first questions to my future to be Swiss colleagues was whether he had ever gotten used to the amazing views. I never expected we would have a factory, compared to the one in Eindhoven, in these surroundings. Combining that with the freedom of my assignment to be able to support any of the departments, e.g. sales, purchasing, supply chain, quality, production, I was directly enthusiastic to start in Switzerland. Note that this was also the moment I got to know the downside of travelling for work. As the director of the factory knew that I would only spend the evening in the hotel, he had no problem letting me finalise the agreements we had made during the

day, to ensure we could agree to it the next day. So even though I got up at 5 a.m. to catch my flight at Schiphol at 09:40; a flight I would get used to next year, my day did not end after dinner. On the other hand, at 2 p.m. the next day, I caught the train back, and in the evening I was sharing my experiences with my friends, while drinking a beer. I had never thought one could be at another side of Europe for only 24 hours.

Then, in January 2020, I officially left for Switzerland. Perhaps by then I should have realised I moved to Switzerland, even though I was able to keep my house in Eindhoven. Even though, initially, my project was planned for three months, I ended up living there for over nine months. For a short period of time, say two to three months, I insisted that I lived in Eindhoven, and worked in Switzerland, but, afterwards, I felt like an expat in Switzerland, who happened to be in The Netherlands once in a while. However, with that acceptance also came the realisation what I left behind in Eindhoven.

Allow me to tell me some exceptional things about Switzerland. First and foremost, I was stunned by the beauty of the country. I have been lucky enough to travel to many parts of our globe, often thinking one would not find these miracles of nature in Europe, but I have definitely changed my mind. Switzerland has the luck to have rather rough parts of the Alps, which

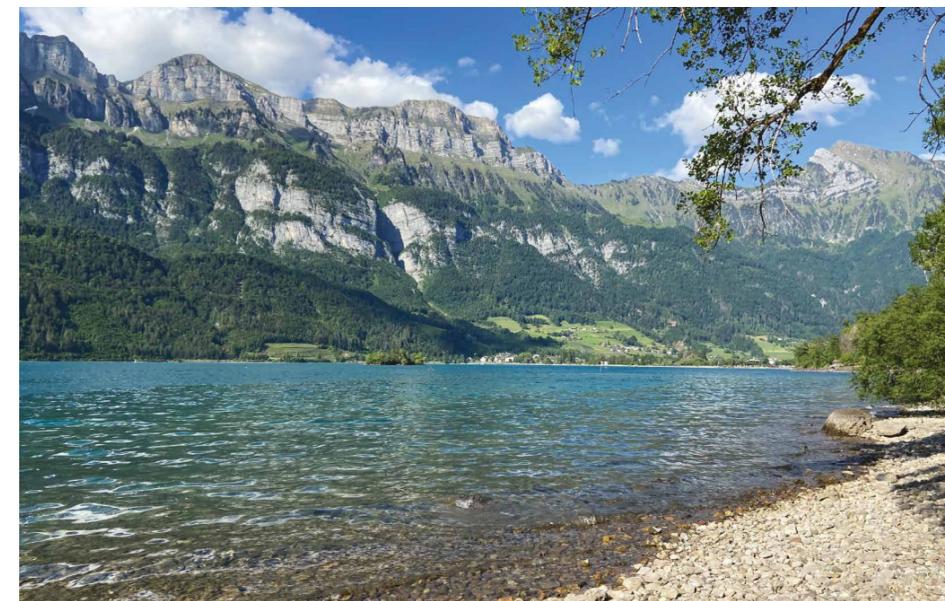
leads to amazing waterfalls, canyons, walking trails, forests, valleys, etc. Combine this with the Swiss government setting out (free) trails around the country, and every single weekend, I was amazed by the nature that Switzerland has to offer. One did not always have to travel far to see this beautiful nature. From my house, I would be in the woods, between waterfalls, the alpine pasture within 5 minutes walking. An evening walk had a completely different meaning there.

Add to that the intrinsic motivation of the Swiss to keep their country clean, and you will be amazed. Literally, if you leave your litter behind, somebody will tell you. As such, it is a feast strolling around the country, ranging from the walking trails to the verges of the road.

Furthermore, and of course, it cannot go without saying, Switzerland produces wine. Therefore, on many occasions, I drove to a vineyard to taste some of the wines they had to offer. I must say, I deeply appreciated the wines they made there. However, Switzerland does not export (much of) their wine and thus you simply have to visit.

There is a downside of living in Switzerland, unfortunately. As you probably know, the country has its own currency, the Swiss Franc, and the standard of living is rather high. Therefore, the Dutch will generally find it rather expensive there. I slowly got used to that standard of living, but in general, prepare for paying around one and a half to two times of what you would pay in the Netherlands. On the other hand, when I would be back in the Netherlands, I would feel like a million bucks, buying literally everything I wanted...

Living abroad gave me the chance to make the next step in my life. Deciding what really mattered to me, and what I wanted to spend time at. It gave the rest in my life I could not find in the Netherlands, and the opportunity to develop myself on a personal level. Of course, I have had difficult times, feeling lonely, trying to fill the time in the weekend when I would not meet



my colleagues or have digital appointments with friends or family at home. Let us just say that exploring the wonderful world of Zelda and the many books of literature I have read, helped me here and there.

As said, I went to Switzerland to work, and I have spent many hours in the office there. The Swiss are very hard workers and work long days. However, I had a position in which I was able to explore completely how the factory is built up, and how the different departments work together. I had a lot of freedom, and a lot of fun. And in the end, they told me I added some

value too. By the way, let me note that I was naïve enough to believe in secondary school that the Germans would be able to speak English, in contrast to the French, and therefore I picked French as my second foreign language. Even though that has helped me on many occasions, for example when hitchhiking to Paris with Lodewijks during sunset, where the French would not always be that open to help, which is a story for another time, I wished the 14-year old Tim had made a different decision. However, from the first day, I told all my colleagues to simply address me in German, because I was able to say: "Das habe ich nicht verstanden." and that would then be a perfect moment to switch to English. This resulted in my German skyrocketing in my first couple of months, but also in me being accepted in the community. This truly eased making contacts and being invited to colleagues' birthdays, to dinners, team events, etc. That is maybe when I truly got to know the country (and Russian vodka...)

A huge difference when travelling for work, I think, is that 'the boss' also pays for your trips back to the Netherlands. On my first day, my manager asked me whether there were special occasions for which I wanted to go back to the Netherlands, because he would always allow me to go back for that. This resulted in my going back during the storm Chiara three weeks after I started in Trübbach, (I was on the first flight from Zürich that actually flew again) for a surprise visit to my mother's 60th birthday, for my father's and sister's birthday, which were combined with a small holiday. But maybe it was most special for me that VDL allowed me to go back for only three days to be at my nieces' birthdays, who grew 3 and 5 years old. By being able to do this, the distance to your loved ones seems to be a lot smaller than when you are really gone for nine months.

Friends and family coming to visit you, really make a difference too. This is really something that you look forward to, and you will always do something a little more special than just being alone and exploring. Just sharing some of the wonderful things; sledding down a road, climbing the highest mountain tops in the

region, going to see the wildlife, helping out with grape picking for the wine, swimming in a mountain lake, going down a toboggan run, visiting the largest waterfalls in Europe, simply amazing.

Will I ever go back, you might ask? Definitely! I have completely fallen in love with the way of life in Switzerland. The peace, the cleanliness, the intense beauty, everywhere you look, and on whatever trail you decide to go up, you will have extraordinary views. When loving nature, this goes one step further.

That is it. That is summarising nine months of living abroad for a Supremum article. I must have missed so many experiences, but I also believe I have captured many. It is an experience I will never forget. And, did I get used to the views? No, never, every morning looking out at the mountains, I was impressed with their greatness and our humbleness. If you ever get the opportunity, I can only recommend you welcome it immediately.

PS I thank Van Veenendaal and Ingmar for their diligence in watering my plants for 'only three months', ending up to be over nine months.



Infimum: A strange or funny quotation from a teacher, a student or faculty member. Here you can find infima sent to the Supremum committee via inf.gewis.nl.

Sanne de W.: "Misschien moet ik mijn SEP-project niet uitzoeken op neuzen."

Celine de J.: "Het is online, je hoeft niet eens een broek aan."

tijdens fuck de dealer terwijl er nog een 2, 5, en 7 liggen

Irne: "5"

Wouter: "Hoger"

Irne: "2"

Wouter legt een 2 op

Anne vd E.: "Alsof een gang bang knuffel niet leuk is."

Keuken staat in brand

Rink: "Ik kan niks doen, heb een champignon vast."

Sanne de W. wijzend naar feminist icon Ada Lovelace: "Zij heeft echt een goede neus"

Pieter: "Doe maar Caïro?"

Gijs: "Hoe schrijf je dat? K-H en dan?"

Jealy bij Running in the 90s: "Is dit de pokemon theme song?"

Tim H.: "Ravioli is gevuld als gedefinieerde pasta."

Jealy: "Op de ALV van *via* wordt heel anders gemierenneukt dan op die van ons."

Max: "Welke manier vind je fijner?"

Jealy: "De manier van *via* want dan is het niet op ons."

JW over TU/e mondkapjes: "Lijkt wel een luiert!"

Ruben zet een replay van een raketlancering aan

Susan: "Wat lieg je nou, hebben het helemaal niet gemist!"

Ruben: "Dit is de herhaling!"

Sjoerd die net een klok biertje heeft geadt: "Mijn buik voelt echt als een gaussian form."

Sanne de W.: "Leon heeft een punt; geef mij maar twintig centimeter"

Banda N.: "Denk je in woorden of in beelden?"

Dick A.: "Nou, ik denk nooit zo veel, dus dat maakt niet uit."

Tijdens het olieballen bakken.

Ruben: "Dit is deeg met verlatingsangst."

Daan: "Laten we dat in de zomer doen, want dan is het waterkanon verfrissend in plaats van alleen pijnlijk."

Lecturer: "Having a camera that spies on birds in the backyard is fashionable these days, even though it is an invasion of the privacy of the birds."

Susan: "Zo veel mensen hebben kinderen, het zal het wel waard zijn. 9 maanden aan pijn en 19 jaar aan kwelling, dan gaan ze het huis uit en is het leuk."

Leon met playstation controller: "Kan je hier nou een Röntgenfoto mee maken?"

Robin: "Nee, het is toch geen UV-licht."

Tijdens het kerstkaarten maken.

Dante: "Is dit wat je krijgt als je Goldstrike destilleert?"

Hondehaar: "Ohja, jij leest."

Tobin: "Ohja jij leest, ik voel me plotseling zo oh ya lele."

Tim: "Heb jij nog jagermeister in huis?"

Iemand: "Nee."

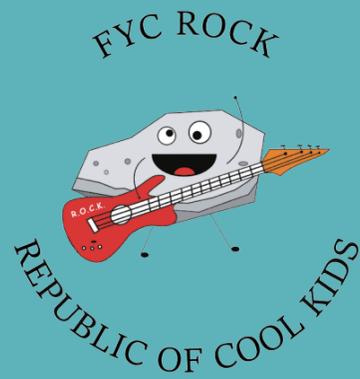
Tim: "Ik thuis ook niet, maar wel ander schoonmaakmiddel."

TIME FLIES BY WHEN YOU'RE HAVING FUN!

Despite the strange year we did have a lot of fun together. When we all couldn't leave our house to go and make fun with our friends, we fortunately still found one another online with a little help of all the beautiful committees and fraternities who hosted online events. After all, we didn't get blown away from each other.

CREDITS GEFLITST





FYC 21-4 ROCK

WE ROCK!

We are one of the new first year committees of GEWIS. Our full name is Republic of Cool Kids (we also don't know why). You might recognize us from our beautiful light blue sweaters with our names on it!

TEXT FYC 21-4 ROCK

Our FYC has changed quite a few times now. However, we hope all our memberships in the FYC are set in stone now (pun intended). Since the creation of our awesome little group, we have already lost two members, but also gained four new ones! At the beginning of the year, we got a great addition to our FYC, namely three female mathematics students. Because of these great members, we are proud to be the FYC with the most female members, and also the most mathematics students. So yay, diversity! Later, we got a new addition to the team, Floris. He is an Amsterdammer, but we are planning to 'burger him in'.

We also have great roles in our committee. We, of course, have the standard roles, such as chairman, secretary and treasurer, but we also have an influencer, a 'punisher', a designer and an activities manager (although that last one isn't very busy these days). Not that any one of us is really busy with our tasks... Except of course for our secretary, she has had so much (fan) mail already. But we would always love more <3 Hit us up at fy21-4@gewis or dm us on Instagram @ [fyc_rock](https://www.instagram.com/fyc_rock). By the way, the punisher isn't what it sounds like, thank God. She is in charge of the punishments we hand out if someone, for example, is late for a meeting.

Because of Corona, it has been very difficult to organize activities within GEWIS or even within our own committee. We try to have some fun game nights every now and then, but unfortunately, we have a bit of a 'digibeet' in our midst. This would be our 'grandma', Loes. However, she gets help navigating computers

from the computer scientists in our group, aka 'the smarter ones' (the mathematicians obviously didn't help create this lie). The pandemic has of course been hard on all of us. There is one member that even completely fled the country because he was so bored here. Our only international member, Rafa, has run away to Brazil. We miss him so much. #riprafa

Also, we try to be very active in GEWIS activities and committees! Before lockdown, you could definitely find some rocking members present at every borrel. Just like all of you, we're super sad that we can't get drunk together anymore. Nevertheless, we do have three members that are already in committees. Our lovely Lucas and Amsterdammertje Floris took part in organizing the FYC quiz that some of you took part of! We also have our great designer Wouter, who is a member of perfect picture challenge. So 'Vo for our active members!

We are kind of like a tiny family within GEWIS. This is mostly because we have two parents in our FYC, because the rest act like their lovely children. They take very good care of their children. Of course, the daddy of our FYC is our chairman, Raphael, and the mom is our influencer, Julia. The babies need their parents, because some are very inexperienced with the aftershock that alcohol can have. If you ever see our youngest member Ymke (just turned 18!), please ask her to show you 'door magic'. We promise you will not be disappointed. Guaranteed laugh.

We hope to get to know all of you (better) very soon!





WIND OF CHANGE

Change, sometimes you know it is necessary, but how do you achieve it? In 1969, the first Maagdenhuis occupation took place, along with other protests by students in the Netherlands. They wanted change: not only the grown-ups occupying management positions at the university should have a say in what is going on, students and other staff members also have something to say and they want someone to listen to them.

TEXT Anne Nijsten (student member department council Mathematics & Computer Science)

Over the years this resulted in a more workable solution than protesting every time people did not agree: codetermination bodies at several levels within the university are now required by law. Still, not everyone is aware of the various codetermination bodies in our university, the younger version of myself included. The first time I noticed the department council was when my student mentor was a candidate in my first year at university. Program committees, which are in place for every study program at our department, only came to my attention after I became a member of the department council. The university council is probably the most visible, especially when you can find their posters all over campus during the elections in December each year.

I experienced during discussions, lectures, mentor meetings, in WhatsApp groups and at many other places that students have many ideas about what is going on in their university life. Considering the contact I had with mathematics and computer science students as a combined bachelor student and student mentor, along with the vague idea of what I thought a codetermination body did, I decided to be a candidate for the 2019 council. That way, I could help make the ideas I heard to be the start of changes.

When you start as a member of the council, a lot of unfamiliar documents and processes are presented during the meetings. Luckily, you are not on your own, as 4 other student members and 5 (currently 4) staff

members are there to share their experience or learn with you. Some tasks of the council are formally defined by law, but for a lot of things members of the department come to the council for advice. To assure a smooth proceeding, being involved early on in processes going on in the department is important for the council. Note: if you get an intricate plan for changes and the request to consent with it within a week after receipt, then your advice does not have the impact it would have when you could have asked questions and expressed ideas early in the process. Therefore, we discuss closely with other parties in the department what is going on, so we can anticipate what we will receive and inquire after it if we do not see it when expected.

Twice a month, we meet with the council, of which once with the department board, to update each other about ongoing topics. Often, to form an advice or judgement, we need more information from the people who are working on different projects within the department. Therefore, we frequently have meetings in smaller groups to gather that information, get answers to our questions and plan the following steps. Each month, students of the university council and different department councils meet to discuss the latest developments at the previous university council meeting with the executive and give each other an update about departmental discussions that could concern others too.

TOPICS OF INTEREST

Each year, many topics come by the council, picked up by various committees. The most familiar examples for students are probably the Program and Examination Regulations (PERs). In these notoriously long documents, all rules for the study programs you follow are documented. We go over the department-specific parts and give suggestions based on the mistakes that were spotted during the year or ideas that were outed by students. For some parts, the council even must give consent before they go into effect.

Currently, the new master program Data Science and Artificial Intelligence is being developed. Although delayed by the Corona situation, it gave the council the opportunity to judge it more thoroughly, resulting in positive advice with some points of attention in 2021. This may seem like mostly an educational topic, but the wellbeing of the prospective students and staff is also related.

When we think of wellbeing in a work environment, something that pops up often is developments in work pressure. The council therefore regularly discusses this with the department board. In current times, where life on campus is minimal and most people miss seeing their colleagues or fellow students in a room in MetaForum, this stays a very relevant topic. With all the quick changes that occur, we have seen that communication is key. Although we did not see our home base on the campus a lot in 2020, moving of offices in MetaForum has been worked on since 2019. In this discussion you see that students and staff may have opposite desires, concerning SEP rooms, meeting rooms and office spaces. It is up to the department board to balance these desires with a view on the future and available resources. The council was involved by expressing the desires of students, checking the proposed balance, and staying up to date around the developments concerning the housing.

Something completely unfamiliar to me were the finances of the department. The process of reading financial documents like a spring memorandum or

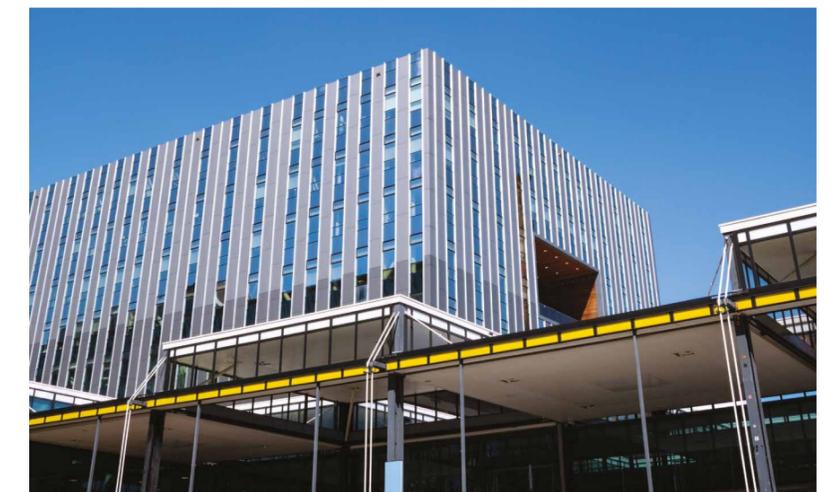
budget was not easy, but still interesting. In the end, money is what keeps most of the business running, and thus is related to our experience of being a member of the Mathematics and Computer Science department.

TO BE DISCUSSED

At the moment of writing, January is reaching its end. Some topics of the 2020 council were transferred to the 2021 council and some new issues pop up. The housing changes in MetaForum seem to become reality soon, the Data Science bachelor is being reviewed after existing for five years, other changes to programs are proposed as the yearly PER process is about to start, and so on... It will again be a busy year for all the members of our department. As a student, it is interesting to see what is going on behind all the lecture slides or blackboards filled with proofs, therefore I very much recommend trying to stay up to date.

WHERE TO FIND US

If you are interested in what the council did in the previous years, you can visit www.faculteitsraad.nl to have a look at our year reports. Each month, the council has two public meetings, one of which with the department board, so if you want to know what is going on feel free to join us. The location information is also stated on the webpage linked above. If you have any ideas that you think the council would be interested in, you can reach us at frwin@tue.nl!



DOCUMENT INTELLIGENCE: AUTOMATED INTERPRETATION OF PHOTOGRAPHED INVOICES

What does DSW health insurance have to do with Mathematics or IT? It is not really the first company that pops up when students think about a company to work for. However, about 200 out of 650 employees at DSW work in IT/Data Engineering/Data Science. Why? Because we believe that digitalisation and AI (obligatory buzzword) is very effective in reducing costs in the health insurance sector, saving money for actual health care.

TEXT DSW

INVOICE PROCESSING

At DSW, we receive many (~1.300.000) invoices per year from customers that want to declare health care costs. Customers can take a picture of their invoice via the DSW app, and DSW aims to reimburse customers as soon as possible. However, the manual transformation of a picture to usable data is a tedious job and, in such quantities, an expensive one as well in terms of labor. There is much information to be extracted before DSW can reimburse a customer: Who is the patient?, Who is the healthcare provider?, What healthcare is provided?, What is the cost?, etcetera.

About 15 years ago DSW started implementing a system to automate this job, combining OCR with business rules to automatically extract data from the invoices. This system has been manually tuned over the past years to optimize its performance, but has now hit the ceiling that we often observe in using business rules. Combined with the current rapid advances in Machine Learning, Natural Language Processing (NLP) and Computer Vision (CV), this fact led to the decision to investigate the redesign of our invoice processing pipeline.

DOCUMENT UNDERSTANDING

The goal is to recognize and classify named entities (e.g. total amount, street) on the invoices. This is difficult for multiple reasons:

- » Every document is structured differently as every healthcare provider uses its own format.
- » Many different formats exist to indicate an amount, date, phone number, and many more (see Table 1).
- » We must cope with bad quality images made by our customers' phone camera.

Amount	Date	Telephone number
63,00	02-03-2020	0612345678
63.00	02/03/2020	06 12 34 56 78
63.-	02-03-'20	+31 (0)6 12345678
€63,00	2-3-2020	06-12345678
63€	2 Maart 2020	+31612345678

Table 1: Example variations in entities

APPROACH

A recently published approach (BERTgrid) by Denk et al. combines NLP with Convolutional Neural Networks (CNNs). They first use OCR to extract the text from the document and then encode the words to context aware semantic embeddings (vectors that represent the meaning of words). They then rebuild a 2D grid that represents the original invoice, but replace the RGB values on the grid with the word embeddings

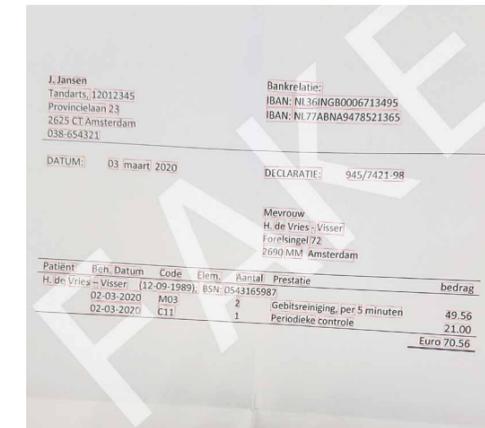
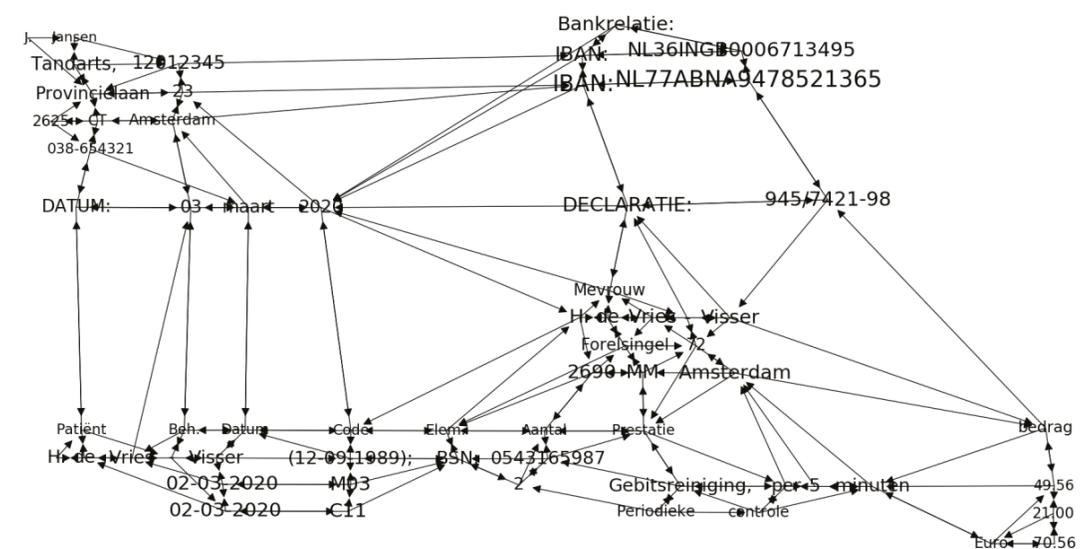
(see the paper for further details). This newly created representation that contains structure, context, and semantics is then used as if it is a normal image.

At DSW we went a step further by omitting the required grid-like structure as used in CNNs. Instead, we move towards a graph-like structure and replace the CNNs with Graph Attention Networks (GATs). The benefit of this approach is the absence of input values with zero informational value (the whitespace on the invoices).

GRAPH REPRESENTATION

We describe the creation of the graph representations in a few steps using a fake invoice:

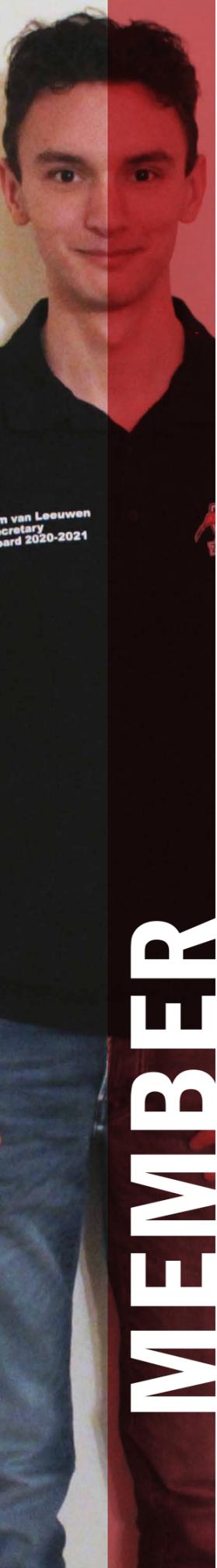
1. We start with the original picture of the invoice.
2. We let Google do our OCR step, as we will never be able to beat their accuracy.
3. We construct a graph in which every vertex represents a word and every edge represents a directed connection to the neighbouring word.
4. We create a feature set per vertex consisting of:
 - a. A word embedding using NLP.
 - b. Word details (character count, frequency in Dutch, starting with capital, etc.).
 - c. Size of wordbox.
 - d. Position in normalized coordinates.
5. We add labels to the graph using output of our currently used system to be able to train the networks.



Using this representation we train a model to find and classify the information needed to reimburse our customers. There is still much work to be done, but we expect to see our first results in the coming month. After that, we will start fine-tuning our network and input representation.

WORK AT DSW

The work environment at DSW is casual and non-hierarchical. DSW attempts to stay close to the frontier of innovation by exploring new techniques, actively motivating you to keep learning. There is also a brand new employee gym to get fit and a bar in the basement (to get unfit). We are located in Schiedam, near the station.



MEMBER

MOTHERBOARD

MY WAY TO GIVE SOMETHING BACK TO ESEV ZEPHYR

“Hey, are you interested in doing a board year for Zephyr with the four of us?
That is how it all started. In the middle of a lecture, my best friend asked me if I wanted to do a board year at the esports association where I had been a member for only 6 months. Of course I said yes, I always say yes, and with that I was part of the unofficial candidate board for ESEV Zephyr in less than 5 minutes.

TEXT Pim van Leeuwen (secretary of ESEV Zephyr)

CANDIDATE BOARD

At first, things started off slowly, since we were very early as a candidate board (for reference: the old board had switched like 2 or 3 months ago). The roles for everybody were determined in a small meeting where I did not have too much competition for my preferred role of choice, secretary. Being a secretary is amazing, since you get to keep everything organized and get to have contact with almost everybody in the association. Being organized and social happen to be two of the things that I can really appreciate in life (but which I do not master, yet). Some of the other roles like chairman and officer of internal affairs were more popular, but eventually, everyone was happy with their role. Because all five of us are Computer Science students, we decided to call ourselves the “Motherboard”.

In the time after this meeting, we took it a little slower until around the end of the third quartile. Meetings with the advisory council and the current board became more frequent as they started to determine whether we were fitting candidates for becoming the next board of ESEV Zephyr. Since previous boards had a history of people who dropped out halfway into their board year, the advisory council wanted a solid motivation from all of us and a serious consideration about the time that being a board member would take. If there is one thing that I have, it is motivation, and if there is one thing that you can always make, it is time. If something is important enough to you, you can always make time for it! My motivation comes

from wanting to become more connected to the members of the association (because I want to become more social) and wanting to return something to the association. Everybody’s motivation was fine, so there were no real objections from the advisory council, hence we were now officially the candidate board for ESEV Zephyr and ready to make preparations for the GMM (general members meeting).

GENERAL MEMBERS MEETING

The GMM was, as every GMM is supposed to be from time to time, a mess. Starting already with getting a location. Our GMM took place at the end of September, around the time when the university slowly started to slip into more precautions regarding some pandemic. Normally the GMM takes place in Metaforum (where our training also takes place), this was moved to an Auditorium room somewhere below and this was, again, moved to the ‘Blauwe Zaal’. All of which was very annoying since we, as candidate board, wanted to introduce some warm snacks during the GMM (people have been requesting this for a while now, as a meme, but that did not stop us). Officially, we were not allowed to eat in the Blauwe Zaal, but since the catering was already handled for the other Auditorium room, an exception was made for us. The GMM itself went as well as one might expect from a board-switch GMM, too little time for the new board, too much time evaluating the old board. Eventually, we rushed the last part and since there were no ‘serious’ counter-boards (yes, looking at you Daan), I soon was secretary of ESEV Zephyr.

ACTUAL BOARD

I will not make this sound nicer than it is, doing a board year in these times can suck. Unable to even host our constitution drink, and a lot of nice activities that we normally do had to be cancelled. On top of that, since last year our first lustrum took place (which was also cut a little short) a lot of money was left for all sorts of big activities to take place this year, which we still cannot organize. But focusing on the negative was not the way to go here, I knew from the start that this might happen, and all-in-all I am doing this for the association which I want to improve, especially in these times.

I started my secretary career as one starts every secretary career at ESEV Zephyr, by updating the member list. Since we are officially a sports association sponsored by the SSCE (Student Sport Centre Eindhoven), every member must have a sports card and pay contribution. Because of this, I first had to check for every member whether they had wired the contribution to us. This would be the easiest step, were it not for the fact that banks like to make us wait for around 2 weeks before switching ownership of the ESEV Zephyr bank account between treasurers (yes, looking at you ING). Apart from this, the most obnoxious step, by far, is checking the sports cards. This is only possible whilst physically present at the office of ESSF (Eindhoven Student Sport Federation, located at SSCE). This cost me 6 trips to the SSCE just to check the sports cards of members. Some of these trips are solely because members of the advisory council and other advisory committees like to ‘test’ my ability to remind/kick people. After all this hassle, which is a lot at first, it becomes very manageable. I now have my own system in this and every current member is checked, checking new members only takes me a fraction of the time.

Besides the administrative part, which is probably boring to most of you (whilst I still enjoy it, because it is organized), there was also the more fun part; mailing, social media and contacting members. Every month I send out the newsletter to all our members, and this

is where I shine. I slightly updated the design of the newsletter compared to last year (since it was really outdated) and I end every newsletter with a small “word of the secretary”, where I send my personal message to the members of ESEV Zephyr. Besides the newsletter, I am primarily working on the Instagram page on ESEV Zephyr. I design, create and post all the content that is on there (in collaboration with our PR-committee). This is also the part that I enjoy most, I get to ask members to write something, I get to promote activities, I basically get to promote the association using every bit of my creative imagination (which is limited, but fun).



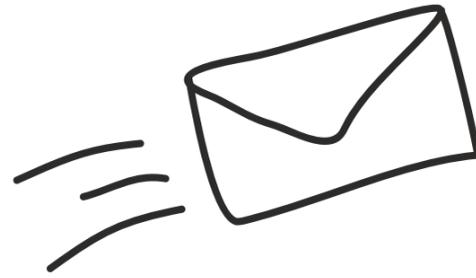
“ If something is important enough to you, you can always make time for it. **”**



So, even in the current situation, I am more driven than ever to make something of my board year. I hope to see more members come in, but even more important, I hope that members feel at home and welcome at ESEV Zephyr just the way that I did when I joined.

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The Current (6th) board of ESEV Zephyr

THE SCREW



TEXT Filomijn van der Poel

October 23rd 6:59pm, Earth

Dear Helen,

Today I met the team for the first time. They seem like a lively bunch. Quick to laugh and joke around, and all very excited to finally start working. To be quite frank with you, I don't really know how they do it. After that briefing, the one where we all met, a strange feeling of premonition settled in my stomach. Although I cannot disclose the details of our work in this letter, you know as well as I do the risks that normally come with this line of work. This time it seems different though, more reckless and avoidable. I never really stopped to think about this before, but right now, as I'm packing for our trip and preparing to leave you behind for god knows how long, I can't help but notice that unsettling feeling, whispering bitter what ifs into my ears, cultivating that restless feeling that I can't seem to shake. I have never felt like this before a job, and this premonition is haunting my thoughts constantly. And I know what you would've said if you were here right now, I know the look that you would've given me. I can almost feel your warm hand on my shoulder, your other arm lovingly wrapped around me. As I sit here, behind my shabby desk in a dorm room barely smaller than a cell, I can feel myself filling up with warmth and determination. I am doing this for us, and after this trip, I will never have to go again. I will be strong, for you.

I hope that you and Misty are doing well.

Love,
Theo



November 18th 8:21pm, the Screw

Dear Helen,

Last week, we finally arrived at the brand new base camp, the Screw. So far, work has been rather exhausting, with little to distract our minds during our time off. Oh how I miss playing with Misty, or waking up to her purring on my chest on a cold winter morning. But this work, waking up day after day without an end in sight, before the first sunshine even touches the dirt, and then working hard until the sun sets again, is draining me more than ever. But then again, this exhaustion and stress could also be contributed to the failing systems and equipment we've been dealing with as of late. Doors close randomly, the electricity cuts out at least twice a day, and the air filtering systems constantly malfunction. Not to mention the old tools we've been given for the drilling and clearing out of the drill site. It's cruel, the way the bosses just expect us to work despite all of these circumstances. Needless to say, it is an endless source of frustration for all the workers on the team. Although the rest of the crew seems to be holding up better than me, I can clearly see these feelings in them too. Their faces are pale, with dark bags under their eyes, and their smiles are different. Not just less frequent, but forced, with a hint of worry behind



those toothy grins. I'm not sure what's going on lately anymore, but it's at least something to have the rest of the crew here. It beats being alone. At least tomorrow I'll have camera duty, which means I can rest a little bit while keeping an eye on everyone. It's not like anything interesting ever happens here.

Nothing interesting except for that same feeling that I have felt ever since we departed a few weeks ago. And honestly, this feeling makes me long for home, for you and the safety of your arms, more than ever. It's kind of crazy, because you know how I am, and that I am not one to miss home. And yet, whenever my attention slips away from me, in the super early or late hours of the day, I find myself returning home to you. Flashes of old memories taunt me in those moments of distraction, reminding me of what I'm risking by being here. However, it also strikes me with new determination. I am doing this for you, for us. After this, we'll have all the money we need. And I also suppose that the hard work offers a small consolation in the sense that I am too busy and too tired to spend a lot of time feeling properly homesick. Which is nice, since I can use a distraction from the fact that you haven't written back yet, probably because you haven't even received my message yet. But I miss you. A lot. Please write back as soon as possible.

Love,
Theo

November 30th 3:15pm, the Screw

Dear Helen,

I'm assuming there are some issues with the connection between the Screw and home, since I still have not received any of your letters. I guess I also don't know then if my messages have reached you either, or if you're ignoring them, but at this point I'm writing these for myself as much as I'm writing them for you. The truth is, the Screw looks different as of late. The long metal hallways are devoid of sound, and it has been ages since I've heard a genuine laugh in the cafeteria during lunch. It feels like something's not quite right, as if something has infiltrated our base and is slowly devouring all the life in it. I think we're all aware of this. The crew is touchy, easily annoyed, and quick to accuse each other whenever something goes wrong. I don't think I've slept properly for days now. Instead, I am kept up, captivated by terrifying "what-if" scenarios that are now more horrifying and worrying than ever before. That ominous feeling that has been following me since the day we left has only grown louder and bolder. I can feel it burning inside of me, scorching my lungs, circulating through my veins like a drug. I am constantly on edge, vigilant. I know I might sound crazy here, paranoid even, but Helen, last night a crew member disappeared.

It isn't uncommon for people to get lost every once in a while, I admit. With this strange, unfamiliar environment we're in it's not unheard of, and I think I have told you crazy stories before about people losing their way in a dust storm, or something similar. But they always made it back. Always. Whether it was because of their own survival instincts, or because we dispatched a rescue team, they always came back. This time, however, my gut feeling is telling me it's different. Something's wrong. We're stuck here though, for at least another couple months is what the bosses said, so I guess I just have to make the most of it. During this time of crisis, I can feel my determination waver. But I'll come back to you, I swear. Before I left I promised you we'd watch the stars upon my return, and I'm not about to give up on that promise just yet. I'm sure the rest of the mission will be a breeze. Please write back so I know you're doing well.

Love,
Theo



December 2nd 19:10, the Screw

Dear Helen,

We found the missing crewmate. I will not disclose the details of the event in this message, since I can no longer be sure that our correspondence is completely private. The important part though, is that he is dead. The rest of the crew is taking the news rather badly. There's so much work that needs to be done before we can return home, and yet they're all arguing and shouting, talking about who caused the accident that killed one of our own. The truth is, White could not have died from something as plain as 'an accident', there is simply no way. I would know, because I found him. A few other crew members think I'm crazy, coming up with this conclusion. But it doesn't surprise me. They're all too busy blaming each other, unable to see that whoever caused this, intended for this to happen. Someone or something is turning us against ourselves, planting seeds of doubt and mistrust wherever they can. From now on, it seems I cannot trust anyone or anything but my own instincts, as it seems they were right before. The worst part about this whole situation, however, is that I feel like it's far from over. Whatever the motive is of White's killer, I highly doubt that that is all there is to it. I have to stop writing here though, because I can see Cyan and Green walking up to me as I'm typing this, no doubt about to accuse me of something I didn't do.

If this message reaches you against all odds, and against my better judgement, know that I will do everything in my power to get back to you. You are my highest priority, and never before have I longed for Earth as much as I do now. Oh, how I wish to leave this alien planet and never return. Please write to me, I need to know that at least you are safe, I need something to keep me sane. Now more than ever.

Love,
Theo



December 24th, the Screw

Dear Helen,

I fear the worst has come. I am sitting against the cold, metal wall in the admin room. My breath forms small swirls of mist every time I exhale, and the sound of my ragged, nonrhythmic breathing is the only thing to break the otherwise perfect silence. It feels almost unnatural, a silence as absolute as this one. The machines have halted, the familiar sound of drilling in the background has faded away, and there are no more footsteps or voices to be heard in the main buildings. I fear that they are all gone. Dead. Murdered by the creatures among us that were posing as ordinary humans. But I know them now for what they are, those filthy imposters.

I will not bother telling you what happened in detail, since I am writing this on a piece of paper instead of on my computer, and I know for a fact that this will not reach you. Not to mention that the communication line between here and Earth has been sabotaged and manipulated without our knowledge for weeks now. They were always one step ahead of us it seems, and now we will have to reap the bitter fruit of consequence that we sowed by our carelessness and ignorance. The hopelessness inside of me is suffocating me, driving me towards a state of panic. I guess I owe you an apology now, Helen. And if you were to find this letter, even though I know you won't, you'll know by the leaking of the ink and the slight deformation of the paper here and there, that my regret is genuine, for I cannot help but cry at the thought of never returning home. I'm trying so hard to remain strong, but I know this is it. I will never go back. To Earth, to you.

"Don't worry about me, Theodora, you'll be back soon enough. I will wait for you, I promise", is what you said to me last. The resoluteness and confidence and love that you exclaimed those words with had been enough to convince me to take the job. Oh, if only things had been different. A feeling of unequaled sadness washes over me while I sit here on the floor, the blood ruthlessly rushing out of my side, limiting the limited time I have left even further. My head is slowly becoming heavier, and holding this pen seems more difficult by the second. Flashes of bright green grass, endless blue seas and impressive mountains cross my mind. Memories of enjoying these things with you resurface, and as a wave of homesickness takes hold of me, I realize the full extent of my situation. I shouldn't have gone, Helen. I should have never left you behind, and now it's too late to fix my mistakes. I wish I could've watched the stars with you one more time, but now I can only hope for your for-

The methodical sound of boots walking on metal suddenly breaks the silence. Startled by the sudden knowledge that I am no longer alone, I drop my pen, and it rolls away out of reach. I look up, and see the sight I've been dreading to see for hours now. There, standing half in the shadows, dressed in the spacesuit of a crewmate, was a person, although now I knew better than to call it a person. They won, was the last thing I could think. They won, and there was nothing I could do. I took a deep breath, and closed my eyes, waiting for the inevitable to come. And then it was over.





MEMBER

ADA: AN ALUMNI INITIATIVE

Since the beginning of this academic year, a group of GEWIS members has started to set up a new alumni network: Ada. However, you may ask yourself why GEWIS has not had an alumni association before? Or, is there already an association out there for our alumni?

TEXT Jealy van den Aker

ALUMNINET TU/E

Before going into all the departmental initiatives, the TU/e also has a central alumni network: Alumninet. As a member of Alumninet, you get several benefits, including the possibility to go to the sports centre and to receive the magazine Slash and invitations for special alumni activities. In January 2021, Alumninet also got a new platform where all subassociations, including Ada, have their own circle. Here we have the possibility to also share our own events. You can access this portal by going to alumnicommunity.tue.nl.

VIE Alumni Association Eindhoven

VERENIGING VAN INFORMATICA-INGENIEURS EINDHOVEN (VIE)

VIE was founded in 1988 as the alumni association for all graduates from the “various computer science-related academic degree programs” at the TU/e. VIE aimed to help graduates with orienting their career after their graduation, which could be very helpful in a time when there was no internet or social media. Since 2008 VIE is not active anymore as an association, as the TU/e was setting up their own alumni network Alumninet back then. However, they have never officially been dissolved and you can still read more about what VIE used to do here:

<https://www.win.tue.nl/vie/>.



VERENIGING VAN WISKUNDIG INGENIEURS EINDHOVEN (WIRE)

After VIE was founded in 1988, the idea of an alumni association also sparked for the Mathematics graduates. Therefore, WIRE was founded in February 1991 as the alumni association for all Mathematics graduates. Undergraduates could also become aspiring members of WIRE. WIRE aimed to bridge the gap between education and industry by hosting company lectures and providing career information. They also had their own association magazine “De Waaier” and hosted informal events with VIE, like a new years drink and a sports tournament. WIRE became less active by the end of the 1990s, but was never officially dissolved.

“ VIE aimed to help graduates with orienting their career after their graduation ”



XOOTIC

Xootic is the association of alumni and trainees of the PDEng program Software Technology (Dutch: Ontwerpersopleiding Technologie Informatica, OOTI). Xootic was founded in 1991 with the goal to have ex-“OOTIs” to keep in touch with each other. Currently, Xootic is hosting meetings and reunions for its members. Xootic also helps the department with informing the industry and potential trainees about the OOTI program.

AIME

AIME was founded in May 1992 as the alumni association for the PDEng Mathematics for Industry. Similar to VIE, WIRE and Xootic, AIME mainly organized their activities as a joint effort from MaCFAN. However, AIME also organized a symposium once for their second lustrum. Since the PDEng program Mathematics in Industry no longer exists within our department, AIME is also not formally active anymore.

MATHEMATICS AND COMPUTER SCIENCE FACULTY ALUMNI NETWORK (MACFAN)

After all studies got their own alumni association around the 1990s, MaCFAN was established to connect all the associations, namely VIE, WIRE, Xootic and AIME. Since the establishment of MaCFAN, most alumni activities organized within the department have been a joint effort, for example the New Years Drink which MaCFAN hosted in 2009, 2010, and 2011. In the past few years, however, there have not been many new initiatives and this called for a new association...

“ Ada is building a foundation for a future proof alumni association! ”

ADA

Ada is building a foundation for a future proof alumni association! The name Ada originates from Ada Lovelace, one of the first women in computer science. We are currently in the phase of collecting a lot of information, for example on previous associations (as you might have read in this article). However, we are also taking big steps by talking to the department, setting up our own website, hosting an informal network on Facebook and mostly, gathering information on what our alumni would like to gain from an alumni association! If you want to stay updated and involved with the ongoing progress of Ada, you can send an email to alumni@gewis.nl!

“ The name Ada originates from Ada Lovelace, one of the first women in computer science. ”

Disclaimer: we aimed at making the article fully fact-based, but there has been limited formal documentation available on the alumni associations so there could be some mistakes.



A NEW WIND IS BLOWING, START GROWING!

It was about a year ago, the 10th of March 2020 to be specific. A date at which something, what seemed to be far away, suddenly came very close. Of course, I am referring to the Corona pandemic. And of course, I am referring to the first day of the Career Expo of Wervingsdagen. On the 10th of March, the first day of the Career Expo was a great success. However, it also was the day the Board of Wervingsdagen got the news that they had to cancel the second day of the Career Expo.

TEXT Wervingsdagen 2020-2021

This news was a big disappointment. All the hard work of the year suddenly turned out to be for nothing. However, this also was the start of something new. A new fresh wind was blowing through Wervingsdagen. We are back, in a different form, but with the same goal: Organizing the TU/e Career Events to facilitate career orientation and personal development for all students of the TU/e!

After the disappointment of the cancellation of the Career Expo, the Board of Wervingsdagen had to search for a new Board. A new enthusiastic group of eight students was found to organize the TU/e Career Events. A new fresh wind was blowing through Wervingsdagen. Full of enthusiasm, hope and willpower, the new Board started off the year. One of these enthusiasts was Vincent Engbers, an active member of GEWIS. After putting in effort for his association, he felt like he was ready for the next step. And he was. He now is the Treasurer of the 40th Board of Wervingsdagen, being responsible for the finances of this big foundation. He worked very hard to let more than 120 companies present themselves at the Career Expo and is working hard to organize amazing Interviewing Days at the prestigious Pullman Hotel.

This luxurious hotel might be a good place to take some time for yourself in your busy lives. The life of a mathematics or computer science student is not easy, of course. However, everyone has got enough



time for themselves by now. The Corona measures, which result in you not being able to do all of the things you would like to do, already take quite a long time now. This is in bitter contrast with what most of us hoped for. At the beginning of the academic year however, it soon became clear that the Corona pandemic was not going to end anytime soon. This led to the fact that the Skill Sessions had to be organized completely online. Although this event was online, a lot of students participated in several

Wervingsdagen

The TU/e Career Events

workshops to develop their skills. Even the Career Expo, which took place at the beginning of March, had to be online. At the moment of writing, the event has not taken place yet. However, I'm sure it will be a great success.

Of course, you did not miss out on our events and you sure will not miss out on them in the future as well. Might it be the case that something still missed your attention, there is a solution. If you follow the Wervingsdagen socials (@wervingsdagen on both Facebook and Instagram) you will stay updated. You can even find posts about board ambition in this digital environment.

It is strange that everything is in a digital environment now, a world full of ones and zeros. Although this might be familiar for most GEWIS members, it is kind of a twist for the average TU/e student. The Corona pandemic blew away all securities in the organization of events and the securities in life in general. The digitalization of education went more rapid than ever expected. The growth is unstoppable. Unstoppable like Lewis Hamilton in its Mercedes, unstoppable like the growth of weeds and unstoppable like the personal growth of students attending the Wervingsdagen events.

Imagine yourself as a little seed, getting fed with skills during the Skill Sessions, growing into a strong flower. A flower able to survive every storm and ready to show itself at the Career Expo. All those companies are overwhelmed by the beauty of this flower. But then, April is just around the corner, the 19th till the 23rd to be precise. The flower has grown so large, since it is unstoppable like weeds and Lewis, that it needs a larger pot. You have grown too large for the university,

the "real world" is your next destination. You have to take a final flight across the Interviewing Days to reach that destination. But you know how to grow. You are unstoppable. Take that flight across the Interviewing Days, pitch yourself and secure yourself a spot at the company where your heart is.

If you are interested in organizing the Wervingsdagen events next year, send us an email at boardambition@wervingsdagen.nl!





THE PROBLEM WITH NEW YEAR'S RESOLUTIONS

And so, it's March (I think... for me it's still January and this is already how I'm feeling), that time of year when you lay down in your bed, stare at the ceiling and think: "WOW!!... I really haven't done a single resolution I set out for this year huh... OHH WELL" and then go and eat some cake and drink beer to make yourself feel better! No? Just me? OKAY! Queue in "Gone with the Wind" Original Soundtrack because boy, oh boy... I feel bad for all those lovely resolutions.

TEXT Leticia Malagutti

Jokes aside, March is actually statistically the month that New Year's Resolutions are purged and completely eradicated and I think I know why. Well, first some random statistics:

- » An oft-cited 1988 study from the Journal of Substance Abuse Treatment shows that only around 55% of people stick to their resolutions for the first month.
- » Research shows that 95% of New Year's Resolutions are fitness related, but after just 3 months, only 10% of people think their resolution will last.

Now, I think there are five main reasons why people give up on their resolutions and you've probably heard these reasons somewhere and maybe not even realized

that they could relate to your New Year's resolutions as well...

1. You already make your resolutions thinking you're not gonna stick to them.
2. You only think about it in the last weeks of December, if not only in the last hour of it.
3. You set H.A.R.D. (Hasty; Anxious; Rash ; Difficult) goals instead of S.M.A.R.T. goals.
4. You don't make yourself and your goals a priority.
5. You think that just because you haven't accomplished all you intended with a resolution, it means it failed.

I wrote a piece last year for myself as if I was writing an article (yeah I do that sometimes, pro-tip: it helps when you're anxious) and I think it's a good time to talk about it:



Today, as I was dropping a friend off at home and as I was passing by this "bridge" (I don't really know what it was, but) I saw this saying "Before I die... I want to" and as a very typical simplistic person I wrote down a very small and stupid wish I want to come true. However, as I was leaving I realized that was not really what I wanted... So I went back to it and wrote "LIVE" in block letters. Before I die I want to LIVE. This is my true wish, and one of the reasons I moved to the Netherlands.

Now, for each person this sentence means a different thing. Just in my small group of friends I can name a few things this could mean: for one of them, it would mean enjoying the youth as they live it (yes, by that I do mean getting very drunk); to another one it would mean getting good grades and proving herself, while another wants that as well, but mostly she wants to live a good love story... To another one of my friends it means making good memories while the other one just wants to make the best decisions possible... To me.. well, that's complicated... I want to live my own life. For someone who doesn't know me well this may seem stupid, but I want to live a life where I don't have to worry about my family, even though I still care about them. I want to live a life where I can travel the world, without being afraid of experimenting new things! I want to LIVE. I want to have fun! HA [FUN! (sorry) I want to enjoy the life of a teenager while I still can... I want to make mistakes! And learn from them on my own! I want to learn as much as I can. I want to meet new people, new cultures... I want to experiment new things and figure out what I actually want...

Yeah this all seems very cheesy, but I thought Dutch people liked cheese (again, very sorry for the puns)... The reason why I'm writing this is because I know that by now a lot of us are thinking about our New Year's Resolutions and I'd like to propose something I've been doing for some years now and loved every

single moment of it: instead of proposing stupid resolutions you know you won't follow, do something simple! Make small goals you know you can achieve! For the past three years the one resolution I've always followed is:

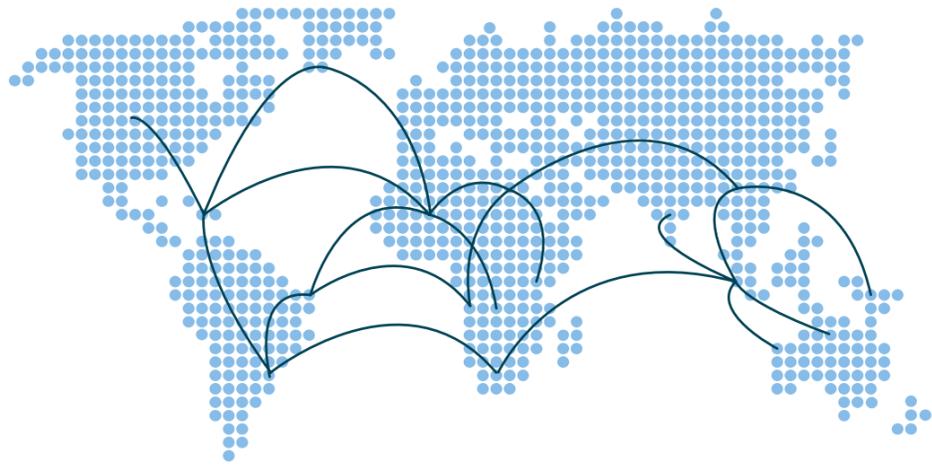
make at least one person smile today. Simple right? I've started this one in 2016 and still follow it to the best of my ability today. Then in 2017 I started another one: give at least one compliment to someone today. Again, really simple, right? Then in 2018: smile to at least 3 people today! For 2019 it was to move to a different country and HEY! I'm here pestering you guys now! They're all SO simple (except for 2019, but we ignore that one) and they really make a difference in someone's life, and, as someone who has SOME issues herself, I can really say a smile helps a lot, even when it's from a complete stranger.

For 2020 my new New Year's Resolution includes the ones I've mentioned and a new one: accept my best every day! It doesn't seem like much but if there is one thing 2019 taught me is to accept my limits. You should always strive to be the best version of yourself, but that also includes knowing when you've had enough. My other 2020 resolutions are also to make new friends (as always), learn a new language, which you can guess: YES! ITALIAN! Ohhh and some Dutch as well! Travel somewhere I've never been, and be the change I want to see (which I have started with this year!)

The moral is: you don't have to bind to something you don't want to, but why not try to be a better version of yourself?! Set yourself some realistic New Year's Resolution and LIVE, before it's too late!

I hope you enjoy your Christmas break.

Kisses,
Leticia Malagutti - 11/12/19"



Poor 19-year-old Leticia didn't know what was gonna happen soon, BUT aside from that she had some good points, you know...

I was talking to a friend today about the new Disney-Pixar movie, "Soul", and if you haven't seen it yet, please do. It's amazing and the message is beautiful! Plus, it links to this "article" I wrote a year ago... COINCIDENCE? I THINK NOT! (If you didn't get the reference, you need to watch more Disney-Pixar movies). The movie explores the idea of living before you die. Weird sentence, I know, but it actually makes a lot of sense! We never really stop to notice the small things in life, like the smell of that fresh coffee you drink every morning or how you like seeing your friends everyday, until you lose it. Before my sister went to live abroad, I never realized how much I liked to annoy her and joke around with her everyday! When it was my turn to live alone, I realized how much I enjoyed seeing my parents everyday and my grandparents every week. And I'm sure before corona started most of you didn't realize how good it is to be able to go visit your friends whenever you want to either! As the captain in Wall-e would say "I don't want to survive. I want to live!" and I think all of us have been appreciating that sentiment more in the recent days. But anyways, that's a bit besides the point... It just makes a nice connection to what I wanted to say, so I thought it was worth noting, but back to my letter-to-self article!

Reading this now is funny because after March, when my 2020 started becoming a mess, I completely forgot about this, and yet, I managed to do almost all the things I said I would! I learned and am still learning to accept my best everyday, but I can say I've had a lot of progress in this area already. I didn't manage to go somewhere I've never been, but coming back to Brazil after having lived alone, I started seeing my city in a completely different way. I did manage to learn more Italian and even "lived" in Italy for a month and a bit. I also managed to learn a tiny tiny bit of Dutch as well (but please don't ask me to show it). I made new friends in the most unexpected place, at my fully-online DBL course last year. I managed to start being the change I want to see by joining this lovely Supremum committee and writing articles about things I think are important and can really help people. And last but definitely not least, I took a "gap year" to take care of myself, accepting my limits and putting myself first.

This year, my resolutions involve moving to the Netherlands again, but now in a more self-understanding mindset and with fewer meds which for me is a HUGE step! My "baby-resolution", as I like to call it, is linked to my baby-resolutions from 2016, 17, 18 and 20, and is to "memory journal". Once in a while I'll get a little notebook and pick a day to write something about. Whether it be a day in the past week or one that happened long ago and I remembered for some reason. It doesn't have to be any day that had a specific event or memorable occasion, it could just be me explaining a random day and saying what I did in it, but I want to have it written down. The best pictures we have are the ones we took randomly on a normal day, and I want to do that with writing. At the end of this year I may have journalled for about 3 days or 300 and it's fine! I don't have to do it a lot, just... do it!

Hopefully that inspires you to make a baby-resolution this year and start actually following the things you say you'll do :)



FYC 21-2 THE BEER MUSKETEERS

FYC THE BEER MUSKETEERS

It all started on a cold and rainy October day. That's when the formation meeting for the FYCs took place. This year was different compared to others, the FYCs were formed at random. After a lot of shuffling around of people Wouter van der Heijden finally managed to get a working composition of the FYCs. We were all matched together in a group. From then on, it was all up to us.

TEXT FYC 21-2 The Beer Musketeers

The difficult process of choosing a name for our FYC began. As you might have seen by now from the title of this article, after some time we eventually decided upon the name: "The Beer Musketeers".

In no time, we quickly became a close group and started having a lot of fun together. Soon after the first years' borrel, we were approached by two new recruits who wanted to join the ranks and become Beer Musketeers! One was recruited at the borrel, the other, somehow, several hours later.

For us, the FYC serves many purposes like getting to know new people, contributing to the study association and most importantly having a lot of fun together. We like to meet up as a group either online or offline, have a little chat and occasionally play some games. Alongside all of that, we battle the other FYCs in the FYC scoring competition. Part of this is the coffee competition, where our chairman René Tielen tried to fight the long battle of obtaining the maximum amount of coffee points by coming to the GEWIS room each and every day. Sadly due to the Corona lockdown, his attempt for 50 coffee points in quartile 2 failed... but the battle is not over. Once the university opens again, it is on again.

The GEWIS room is also where our most recent member came to us. After having a little chat with a couple of the Beer Musketeers he decided to join the ranks.



To challenge the other FYCs even more, the Beer Musketeers decided to create a crazy44 challenging the other FYCs on various different fields. Our committee lacks no dedication when it comes to these challenges. We'll start by introducing our chairman, René Tielen, a man who keeps the meeting structured, sometimes too structured. Our treasurer Jelte Schuurmans who still managed to not spend all our money, nobody knows how. Our secretary Tim van de Wal bets he can win a harmonica battle against Kees Huizing. Thomas Broers is the graphic designer of our army and responsible for our beautiful logo and merchandise. Chef des Festivités is a role fit for one man, and one man only, Bas van Hoeflaken. Another important task is the heavy burden of snack manager, which goes to Finn Wiers. Then we have Thymo Fieten with the role of vice-chairman, aka 'Vieze Stoelman'. What is a chairman without a Couchman, that role can only go to Daan van den Bogaard for claiming the couch of Bas. Last but not least, our newest recruit is Sven Mokveld.

Infimum: A strange or funny quotation from a teacher, a student or faculty member. Here you can find infima sent to the Supremum committee via inf.gewis.nl.

**Tijdens Athena muziekborre!*

Max: "Dit is toch High School Musical? HOE KUT IS DAT???"

Suus: "Sommige mensen zijn echt een vleestype."

Healy: "Waarom heb je geen automatische gordijnen? Dan zeg je gewoon: "Hey Google, turn down the curfew!""

Suus: "Mag ik een balletje van jou?"

Anne: "Ja hoor. Het smaakt naar gehakt."

Suus: "Het is varkensgehakt. Tis knor."

Jealy: "Je trekt een bank, dat is zo vies"

Rink probeert in te loggen op de webmail: "Waarom is de webmail zo traag? KUT JEALY!"

Nog steeds hard aan het werk voor SEP

Vincent tegen Rink: "Welk toetsenbord heb je? Die is best wel clean."

Rink: "Aluminium."

Lars: "Weet je wat ik me besepte, als je een lepel binnenstebuiten keert, heb je nog steeds een lepel."

Arend: "Palindroom?"

Lars: "Zowel in woord als in bestaan"

Loek is September van Earth, Wind & Fire aan het zingen

Gijs: "Loek haalt niet echt goed zijn hoge noten"

Rink: "Sinds wanneer jouw interesse in Loek zijn noten?"

Sven, lid van FYC De Biermusketeers, en Meeles stonden tegelijk bij het GELIMBO-StropTas-afhaalpunt bij Ralph.

Meeles vraagt Sven of hij Ralph al kent.

Sven: "Nee, ik ken eigenlijk nog helemaal geen tweedejaars..."

Jasper: "Dat is van Tom Odell."

Martijn M.: "Oh dat is het neefje van Adele."

Sietze: "En ook van Adolf!"

Irne: "Deze smaakt wel een beetje naar een API"

Roy: "IPA bedoel je"

Ilse over haar neusgaten: "Ik kan hier echt meerdere vingers in kwijt. Ik zou wel meer vingers willen."

Wouter: "Irne je bent wel een beetje klein voor mijn fiets, maar je mag wel in mijn fietstas"

Wouter: "Maar dit hoort toch echt kei goed te zijn?"

Rink: "Ja en de mean squared error is ook heel laag."

Leon: "Rink, het gaat over Hamilton muziek..."

Teacher: "Oooh, I missed that. We were Zoom-bombed by a cat!"

De Meeles na 1,5 fles wijn: "Ik heb nog steeds visie maar de richting ben ik wel kwijt."

Leon: "Waar is Sanne als je er nodig hebt. Noa, maak even een feminisme opmerking."

stilte

Noa: "Vrouwen.... zijn goed?"

Sietze G.: "Van Bossche Bollen ga je denk ik echt heel snel dood."

Matthijs L.: "Daarom eet ik ze."

Sanne trekt aan d'r brood tegen het licht in: "Ja dit doen ze bij Heel Holland Bakt ook altijd, geen idee waarom eigenlijk."

Jealy van den A.: "Shall I do my intermezzo where I explain numbers now?"

Sjoerd: "In Mexico-Stad wonen echt kei veel Mexicanen."



WHATCHA DOIN'?

To some of you the title of this article will ring a bell, but perhaps the Dutch variant – ‘Wat doe je?’ – is better known to our audience. Not only is this a line used by many kindergarteners, the ever-curious character Isabella from the Phineas and Ferb animation series uses this line just about every episode to hear what the boys are up to. As I have always been quite keen on asking this question myself, I'm hereby asking you: Whatcha doin'?

TEXT Erik Takke

To start, I don't mean it in the sense you probably expect. Although I am certainly curious as to what you are up to right now, I would like to ask you this question in a broader setting: What are you doing with your life? Skipping the philosophical question about what 'life' exactly means, let's have a look at what your daily life looks like. As most of you are students like me, your day is probably some mix of eating, sleeping, studying, and hanging out: a cycle that is repeated until we graduate. Although this balance might be perfectly satisfying for now, I would be highly surprised if you want to stick with this regiment for the rest of your life. What you are doing right now is ultimately for something later; for what comes after your study.

So, I'll bite: what are you planning on doing after your study? Although I cannot be sure, it is very likely that you will try to get a job somewhere, or perhaps start your own venture. Here, you work for a couple of years and take some classes every now and again. You switch jobs from time to time and go on holiday once to thrice a year. Perhaps you will make a complete career switch somewhere along the way. This sounds fun and all, but is this stage – working life – an end-goal, or do you view work simply as a period you need to go through to save up for retirement?

I must admit that retirement actually sounds pretty good: you can get out of bed whenever you like, sit around all day doing whatever you want, have drinks with friends whenever, pay for things with money you got from the government, etc. It sounds like the

pinnacle of life, but we have left out one very important yet annoying factor: death.

The reality is that, although most of us will, many might not even reach the age of retirement due to a variety of factors such as illnesses and accidents. Assuming you will reach this age, chances are you will have to take some form of medication every day. You might be visually, audibly, and/or physically impaired. A nasty thing called 'age' is slowly eating you up.

In case you haven't caught on with what I'm trying to get at: living *solely* for the future is a fallacy. There is no guarantee that 'the future' will happen – let alone the one you envision. The sense that life does work this way is caused by your brain tricking you into believing that what you witness today is somehow a guarantee for what tomorrow will look like. Put in mathematical terms: your brain is extrapolating on data that does not warrant this.



This does not mean that I'm an advocate of the 'carpe diem' approach – only worry about this very minute because the next might not come – either. I think it is perfectly fine to choose a study because it has good job prospects and to take a job because it has a good collective agreement. What I have noticed when looking at myself and those around me, however, is that the balance between living for the 'now' and living for the 'future' is often off.

I can't say that I have found the root cause for this imbalance, because, let's face it, if I did you wouldn't be reading about it in this magazine. Still, it would not surprise me if the imbalance is caused by a mix of dissatisfaction with our current position in life, a missing appreciation for life itself, and a useless fixation on wealth and power.

Let's start with the first of these. I don't think that striving for a life that is better than the one you have right now is inherently bad: compare our current living situation with that of Europe in the 1800s and I think you will agree. Where I think things go wrong, is when we forget to take the time to look back at what we have accomplished and simply enjoy and appreciate it. So, take a minute – right here, right now – to appreciate where you are in life. It might not be perfect, and you may have made some mistakes along the way, but you have already achieved so much. Be proud of and happy with yourself for this!

Regarding a missing appreciation for life, a similar idea applies. In a society whose sole focus is hurdling itself towards the future at an ever-increasing pace, we forget to think about what we are doing. When was the last time you thought about what life actually is? What does it mean to be alive? How often do you



appreciate the fact that you can move, communicate with others and use that brain of yours to think? Have you realized what an incredible feat it is to be able to, say, run up the stairs? Simply put, you are an amazing being. Enjoy all the things you can do, even the little ones.

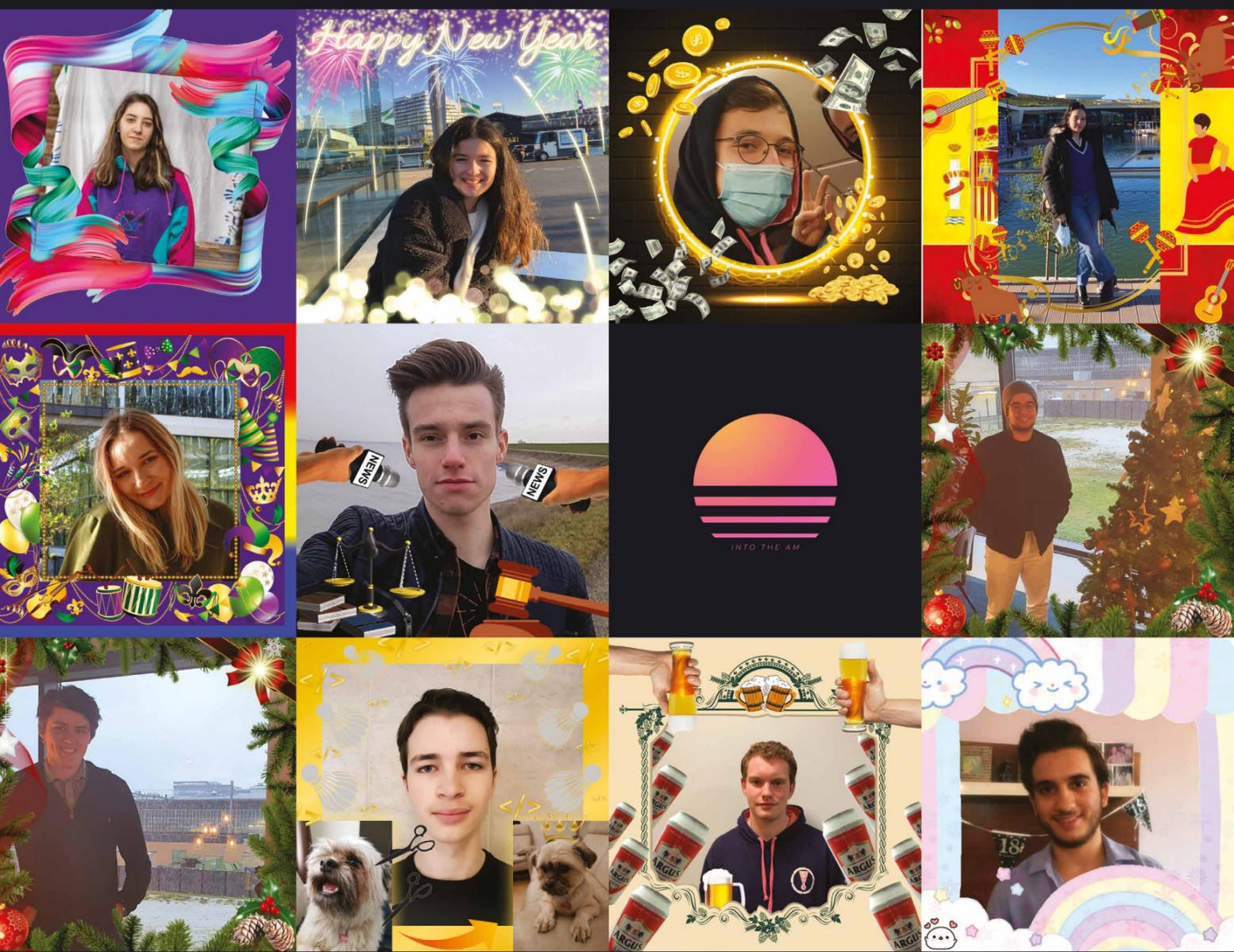
Like the previous two, the third topic – a fixation on wealth and power – is one we could spend an entire book on. Fact is, and I'm noticing this in myself too, that wealth and power are extremely attractive to many of us. Mix them with jealousy and you get perhaps the most toxic of longings: greed. This feeling of never having all you want is a ruthless killer of joy; you will never be satisfied because you never have enough. So, take a look around. You have a roof above your head, a study to dig into, good health, and three meals a day. We live in one of the richest countries in the world. Point greed the door, because it will mentally kill you if you let it. If this still has not convinced you yet, I hope you see that hoarding wealth is utterly pointless. After all, "you will never see a U-Haul behind a hearse." 0

To wrap up, realize that you are the only person living your life; you are the only person to enjoy all the things you get to experience. What makes it even more fun is that you get to shape it the way you want. So, make plans for today, for your retirement and everything in between, but above all, make sure to enjoy every step of the journey. You will thank yourself for it someday.



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Denzel Washington, during his commencement speech at the Dillard University, 2015.



FYC 21-0 ITAM

ALL-NIGHTERS WITH FYC INTO THE AM

No, the name of our FYC is not a tribute to our terrible sleep schedules (although it just as well could be for some of us), it's about a life lesson. Work hard, play hard. Close your eyes for a moment and think back to the last time you pulled an all-nighter for an exam. Pretty relatable right? Now think about the last time you had a party where you didn't sleep all night. Probably less relatable because of the global pandemic, but whatever, you get the idea. That's what we're all about. Whether we're studying or partying, we go all the way through the night, Into The AM!

TEXT FYC 21-0 ITAM

So, now that you know what ITAM means and what the sentiment behind the name is, it's time to introduce our first year committee. We're a crew of 11 students from all over the world, from Romania to Spain and from Turkey to Canada. Currently, 6 of our 11 members are internationals, which means our easy fallback conversation topic is usually about our countries and cultures, from flexing with Zeeland's beautiful shores to talking about how weird our languages are. Not only that, one of our members is known for suddenly being able to speak French "fluently" when tipsy. So yay to internationality!

Let us tell you a little tale about how we got together. We started out as a group of 12 on the FYC formation day, together with the core of one of the other FYCs, GeLØL. We had to split up since our group was too large, and although we were sad about it at first, we were over that quickly since we got to meet a bunch of cool new people! The main reasons our members wanted to join an FYC is because they wanted to get to know more people and because it just sounded like a lot of fun. And after a couple of months, I can tell you that both of those were definitely successful.

We also have a special place in our hearts for our "informal meetings", which accidentally became our coined term for social drinks. Apart from those informal meetings, we like to get coffee or tea at GEWIS

and you can find us hanging out in the lounge together regularly. Our member Cas has mentioned that the GEWIS lounge is our "Batcave" because we spend a lot of time there. This is also why we are the leader in the coffee rankings, although sadly, the same can't be said about our actual FYC points. We believe this is partially due to the fact that we put a lot of time and effort into designing our hoodies, so we could wear them with pride at the borrels. We love the way the hoodies turned out but it was still kind of a flop, since there are no activities taking place offline currently...

“ Whether we're studying or partying, we go all the way through the night, Into The AM! ”

If you want to hear about the activities as soon as we plan them or want to learn more about us, then we encourage you to follow our Instagram: @itam_fyc. We are introducing all of our members there and we will use it to show you how we are experiencing our first year. Hope to see you there!

COMMITTEES & FRATERNITIES

GEWIS is built on top of committees. Besides, Study Association GEWIS has several fraternities which contribute to the atmosphere and organize activities.

Find out more at: www.gewis.nl/association.

FRATERNITIES

ATHENA
ATHENA



B.O.O.M.
Buitenplezier Op Onze Manier



Défi
Défi



GELIMBO
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Initiatieven Met Bewondering
en Ontzag



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Activiteiten en Geeky
Evenementen



I.V.V
In Vino Veritas



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GR8-TIMES

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Interessante Toffe Enthousiaste

Ideeën Teweegbrengen

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First Year Committee

FYC20-1 THE MEERKATS

First Year Committee

FYC21-2 THE BEER

MUSKETEERS

First Year Committee

FYC21-3 GELØL

First Year Committee

FYC21-4 ROCK

First Year Committee

FYS

First Year Support

GEBALLMERPIEK

GEWIS'sers Ervaren BALLen MET

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Excentrieke Kups

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GEWIS'ers Dwalen Waar

Anderen Anders Lopen

GEFLITST

GEWIS Fotografeert Leden In

Toffe Situaties, Toch?

GEHACK

GEWIS Ervaart Het

Algoritmisch Code Kloppen

GELIFT

GEWIS'sers Liften

Ieder Fantastisch Traject

GEMOLD

GEWIS'ers moeten

overal leugens doorzien

GETAART

GEWIS'sers Eten TAART

GEZWEM

GEWIS Zeilt Weer Een Meter

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