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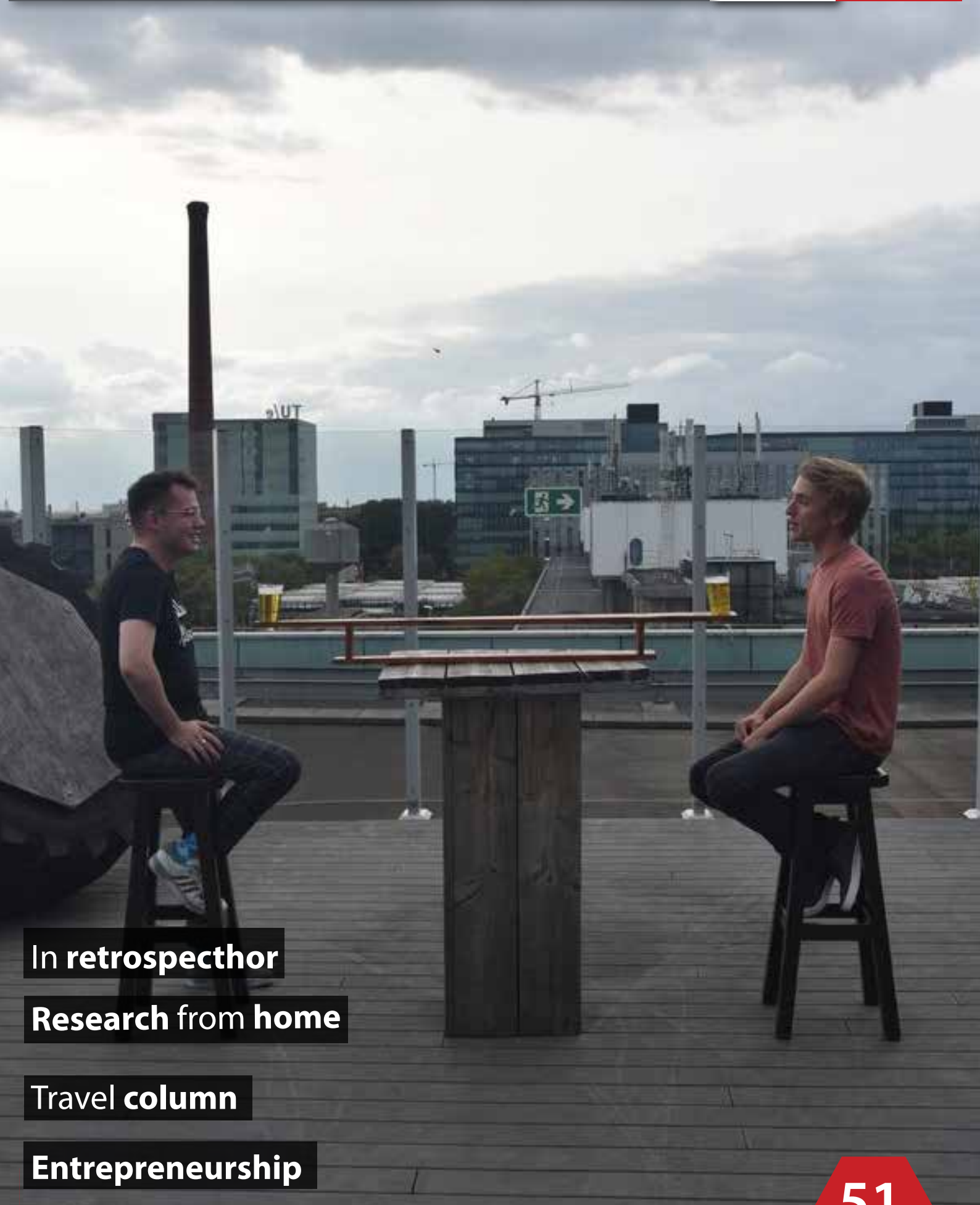

In **retrospecthor**

Research from **home**

Travel **column**

Entrepreneurship

Magazine of e.t.s.v. Thor and the department of Electrical Engineering at Eindhoven University of Technology

51
September 2020

Connecthor

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Welcome back to Flux. After many months of working at home, most of us have returned to the campus for one or more days a week. It is good to be back, seeing our colleagues and fellow students in person again. Having that chat at the coffee machines, with always keeping in mind to keep the one and half meter distance. Also, incidentally forgetting the campus card to our offices. Because we aren't used to have it around all the time anymore. A change of workplace is good. It gives us the inspiration we need to start a new academic year.

It gives us great pleasure to present this Connecthor to you. Within this edition you will find a word of welcome to our new students from our Director of Education Bachelor Electrical Engineering, Sjoerd Hulshof. And as you might have expected, the new candidate board members of Thor introduce themselves to you.

Ton Koonen, who has been vice-dean of the EE department since 2012, has stepped down from this position. He wrote his last Board Issues as a valued member of the Faculty Board for the Connecthor. Sjoerd van der Heide and Armand van Deursen wrote about research at home in times of the Corona lock down. Read about it on pages 20 and 21.

As a variation to our Life after EE item, we have started a new article series, where we ask former Thor board members to look back at their time as an active member at Thor. Since this is the 51st Connecthor issue, Joost Greunsven, President of the 51st board, kicks off. What has being an active member at Thor brought and taught him? If you want to know, please turn to page 22.

We have some very entrepreneurial students. Horst Fietje is one of them. Read about why he thinks entrepreneurship is important on pages 26 and 27.

Finally, we would like to inform all of you that the Connecthor editorial board has positions open for creative and enthusiastic employees of the Department of Electrical Engineering interested in joining us to make the Connecthor magazine. Up for a new challenge? Please contact us!! As always, we will be glad to receive your suggestions and nominations for the 'vlaai' and ideas for upcoming editions. You can contact us via connecthor@tue.nl.

We hope you will enjoy reading this new edition of the Connecthor!

The Connecthor editorial board

Introducing candidate board
Are you already familiair with the candidate board? They will introduce themselves on page 16

In retrospecthor
How does Joost Greunsven look back on his time with Thor? What did he learn? You can read about it on page 20

Travel column
Not sure where to go on holiday after Corona? Perhaps Sander will give you some inspiration on page 24

Research from home
Read more about how Sjoerd van der Heide and Armand van Deursen have been doing research from home on page 18

A warm and hybrid welcome for all students

By: Sjoerd Hulshof

It is a great honor for me to welcome you to the Department of Electrical Engineering. It is also a great pleasure for me to invite our new students to our beautiful Flux building. This year it's all a bit different, and we all know why. COVID-19 has had a huge impact on society and on you as an individual. Your start at TU/e will therefore be sort of hybrid, meaning that you will only be on campus part-time. The remaining academic time you will spend online. So, what does this mean for you as a first-year student?

First of all, I want to stress the fact that we want you to be on campus at least once per week, but preferably more than once. You have most probably already experienced it during the introduction week: being on campus and attending physical activities is a different experience than attending similar activities online. The added value of real-life socializing is of uttermost importance in my opinion, and especially for first-year students who still need to adjust to a completely new way of life: another city, for a lot of you even another country, living on your own, a different study pace and more responsibilities. Being able to share all these new experiences with your fellow students is a bare necessity, and the more you can do this in 'the normal way', the better.

Nevertheless, everybody is already more or less used to 'the new normal' or the '1.5 m society' with social distancing, so in that sense you are experienced out of necessity. In practice this means that only 20 to 30 percent of our building capacity can be used at any given moment of the day. You can imagine how big the challenge is we all have to deal with to get this organized in a fluent way. I think that the scheduling department in cooperation with all lecturers have done a great job in putting together a feasible schedule that provides each and every student with on-campus activities at least once per week during the first semester. What the second semester will look like is of course still uncertain, but for now let's be sensible in our behavior and stay healthy.

Finally, life is not all about the Corona virus, although it may feel that way sometimes. My advice to you is to focus on your new life as a student, to enjoy your new studies and to go out and make new friends. After all you are here to make your first steps towards a career as an academic engineer. The more you are into it, the better it will work out for you.

Good luck!

Sjoerd Hulshof

Bachelor Program Director

Electrical Engineering and Automotive Technology ■

From the President

By: Sanne van den Aker

This is it. The last time I am allowed to write a piece for the Connecthor (or at least for this column, who knows what comes next). After so much of practicing – not only in the Connecthor, but also with all the yearbook articles and speeches I wrote – it should be easy. As this is my last article, and most new students will read it, it should contain something worthwhile, something to remember. But I'm empty. I have never struggled as much on writing a text as I am doing right now.

What comforts me a little is that I have heard I am not the only one. For more and more people it is hard to stay creative and on top of things. It is not strange when you feel like so little is happening around you. Usually I would draw all my creativity from the people around me, but nowadays that's a little harder. Luckily, there are multiple ways to keep in touch. The drinks have started again, giving the opportunity to see each other on a safe distance in real. Nonetheless, the Discord server is still running, and a frequently used option to talk to each other. And just now we have been able to welcome a lot of new students over there, during the introduction week. A great week, with lots of new faces and quite a lot of them spotted not only on the Discord, but also on campus! The day of the university opening again is also coming closer and closer, so there is enough to look forward to as well.

Which brings me to one of the things I have learned during the past few months. The future might look a bit uncertain and dark, with the present being not much better, but there is always some joy to be found. And that is not just in what is coming, as that might sometimes be harder to see, but also in what is happening right now. I mean, I am pretty sure most people have gotten more sleep since studying from home, as there is no need for travel. Or maybe you started working more efficiently. I certainly did. This gave me extra time to pick up some old hobbies that got lost along the way, but also to start learning some new skills.

Learning and discovering new stuff is also definitely something that keeps me going and excited. Meine Deutsche Sprache braucht vielleicht ein bisschen mehr trainieren, but I think it is going relatively well. Besides trying to learn a new language, I have discovered some beautiful places in Eindhoven. A lot of time I have left these days, is filled with walking. I started out with walking small circles around my house and they rapidly became bigger, as did my knowledge of my neighborhood and all it has to offer. Before you know it, your house does not feel as cramped anymore and you have found new places to just chill, maybe read, and replenish your energy.

Of course, you will not always feel great during these times, look at me at the start of the article. Sometimes you won't find the small things to make you happy, as I tried to describe here, and that is alright, everyone needs their off-days as well. Sometimes you just need to play games or watch Netflix all day and not care about your responsibilities and that is perfectly fine! I have also had those days, and even though not all days last year were amazing, I am looking back on a great year with an amazing board and all the other people that made it happen.

And I am sure, whether it is your first year here, your last, or somewhere in between, you can look back on a great year as well, this time next year.

Veel gedonder!

Sanne van den Aker

President of e.t.s.v. Thor ■

Introducing...

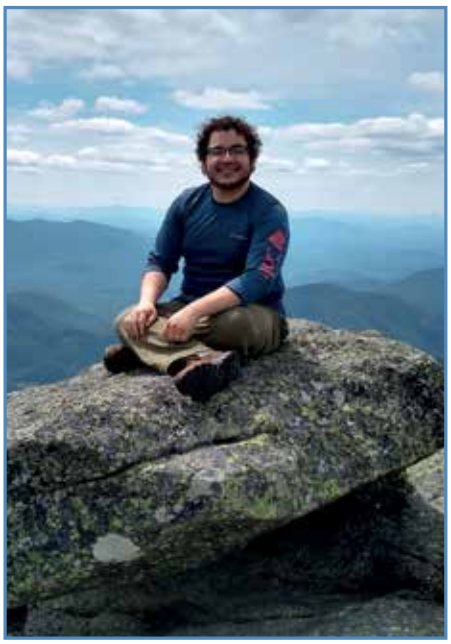
Hi there, I am Paulo Torri and since May I work from home in Brazil as a Researcher and Lab Manager for EPE Group - Department of Electrical Engineering. Even at a distance, I felt welcomed and well-supported by colleagues that I still do not know personally, or met quickly on a short visit to TU/e last year. This is a good example of the TU/e supportive working environment and the capability of the University to re-invent itself as well as to create mechanisms to keep tasks going on.

I was born in the south of Brazil, taking a BSc in Electrical Engineering in 1984 at Federal University of Santa Maria, and a MSc in Power Electronics and Electrical Drives at Federal University of Santa Catarina in 1986. I worked at a large company (WEG) in Brazil for 29 years, fulfilling several positions in a R&D department, and creating a variety of commercial and industrial power converters for electrical machines control and renewable energy (solar and wind).

During 2016 and 2017, I worked for European Spallation Source particle accelerator in Lund-Sweden. Here I have been involved with design and realization of power supplies for magnets (proton beam control) and high voltage power converters (modulators up to 115 kV) for RF amplifiers.

In the last two years I've been in Newcastle upon Tyne (UK), as technical leader of a multi-skilled power electronics design team on a challenging project: a Power Electronic Converter for energy transfer in between high-voltage feeders and substations, utilizing the latest Silicon Carbide (SiC) semiconductor technology. It's main purpose is to re-balance the power flow of networks submitted to high content of EV charging or renewables.

I expect to learn a lot, collaborating with my experience in supporting innovative researching projects at TU/e. ■



Hello everyone! My name is José Pérez Romero, and this past June I started my work as a PhD researcher in the ECO group.

I was born in the small and mountainous Honduras, where I completed my bachelor's studies in telecommunications engineering. Afterwards I moved to the University of Rochester (NY, USA) for a MSc degree in Optics. In Rochester I worked with novel optical systems at many different power levels, from detecting nanowatts of light scattered by a photonic chip to optimizing optical fiber fusion splices for kilowatt power delivery.

Now, I have started at TU/e to pursue a PhD project that combines my interests in communications and optics, using machine learning techniques to develop new software and hardware for microwave photonic communication systems.

On the weekends I work as a football journalist, publishing articles and podcasts where I analyze the game through stats and data visualizations. Despite the extra work, I still have some free time to play volleyball, go hiking in the mountains, or enjoy new beers and spicy food with my friends.

Due to corona lockdowns I started my PhD work remotely from the USA, so I really look forward to finally arriving in Eindhoven and meeting all of you! I'm always happy to help colleagues, so feel free to contact me if you ever need advice and support on building optical fiber and laser systems, as well as scientific communication and outreach. ■

Hi everyone! I am Marija Trajkovic and to be frank I am not exactly new at TU/e. Last year I finished my PhD, which was a collaboration between Photonic Integration (PhI) Group at TU/e and III-V Lab in France. Having spent majority of my PhD in France, I have decided to explore the Netherlands further, and continued as a PostDoc in PhI group. Finally, after a year of PostDoc, the road led me to another position – still being faithful to TU/e. This time I am trying to facilitate the life of researchers as a Project Officer for several different groups, all dealing with photonics.

In my free time I love traveling, dancing, hiking and reading. When traveling I like exploring outdoor places to do yoga and, if possible, dance. Additionally, exploring different cultures through food is a wonderful way of discovery. Also adds up to my cookbook. :)

My office will be on the ground floor, so if you find any relevant business to discuss – you know where to find me. ■

Hello everybody! My name is Daniel Vakulov. Recently, I joined the Photonic Integration Group as a Postdoc. Photonic Integration Group is a world leader in photonic integrated circuits.

In 2015 I started my PhD project at the Applied Physics department of our university. My project was focused on developing new materials and their characterization for sustainable energy applications. Particularly, thermoelectric energy harvesting. In thermoelectric energy harvesting, the physical phenomena of semiconductor materials are used to convert heat into electricity. As a result of the project, we have discovered the material which is suitable for the energy harvesting and designed the prototype of the thermoelectric device, which has been patented.

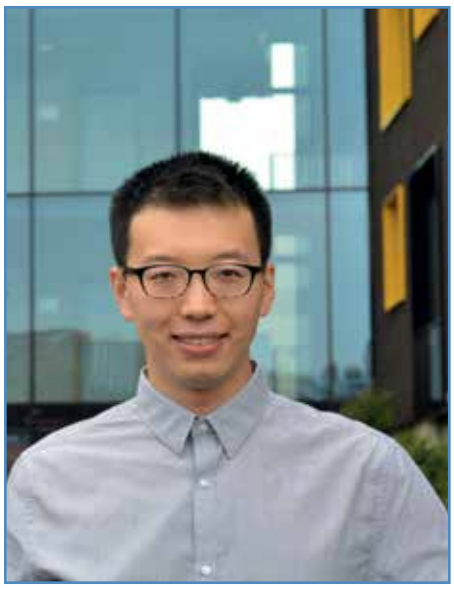
At the moment, I am working on the development of fully integrated LiDAR sensing systems, which is prospective for automotive and aerospace applications. I am very passionate about new technologies that improve our life and contribute to the next generation of smart devices.

In my spare time, I like to do biking, play the guitar, and travel abroad with my friends. I am looking forward to meet new people and having exciting conversations (not only about science). Hope to see you around in real life or online! ■

Hello everyone! My name is Zhaowei Chen. I recently joined the PhI group, starting my PhD as of June 2020. I was born and raised in Xi'an, China. I received my bachelor's degree in Mechanical Engineering from Northwestern Polytechnical University, China. Then I went to Karlsruhe, Germany, where I received my master's degree in Mechatronics at Karlsruhe Institute of Technology (KIT). The emphasis of my master study was on the microelectromechanical system (MEMS). Combining this with my interest in optics and photonics, I finally led myself to the fascinating world of photonic integration.

I am currently working on an EU-funded project that aims at developing high-speed transceivers on indium phosphide material for next generation datacenter. In cooperation with partners across the Europe, we are together devoted to realize new InP devices, which are capable of boosting the data-transmission speed to the next level.

In my free time, I like travelling around and recording the highlight moments of my trip by photographing. I also enjoy being outdoors, for example, hiking across mountains and woods. Sport is another essential component of my daily life. Jogging, swimming, skiing, and playing basketball are all on my list. I am usually on the 9th floor of the Flux building, and hope to meet you soon! ■



Board issues

By: Ton Koonen

It has been a nice time in the EE Faculty Board… How time flies… It has been almost eight years ago, in September 2012, when I was invited to become vice-dean of our EE department by our dean at that moment, Ton Backx. In the Faculty Board (FB), my task would be to survey the research activities in our department, and to contribute to shaping the department's research strategy. Ton kindly invited me to succeed Arthur van Roermund in this position, who had done a great job in that since many years. It was an interesting multi-facetted task, as Arthur nicely told me.

The FB convenes every Wednesday morning, and discusses a wide range of topics, some of high urgency, other ones of a longer-term strategic nature. Personnel affairs are a weekly recurring FB agenda point, with great care and typically at quite some length, in the presence of an HR officer. Of course, the research staff is a key topic in these discussions; in the FB we closely monitor the careers of our people, and diligently coordinate the recruitment of new staff (quite a challenge given the upcoming retirement of many staff members, a task which has not become easier since the Irene Curie regime entered…). Issues and plans in research, education and operations (housing, finances, …) are on the main menu of the meeting too.

In the FB, next to the Dean (chairing the FB) and Vice-Dean, the members are the Faculty Director, the EE Director for Education (since a few years we have two directors, one for the BSc and one for the MSc and PhD program, the latter recently appointed as Vice-Dean Education as well), a student member, and the secretary (of course, to make the minutes and keep track of all decisions and action points…). There have been quite some changes in the FB over all these years when I was vice-dean: Bart Smolders as Dean took over from Ton Backx, Jolie van Wevelingen as Director from Alfons Bruekers and Suzanne Udo, Huug de Waardt and Sjoerd Hulshof from Bart Smolders, and recently Marion Matters from Huug de Waardt. Obviously, these personnel changes also have their impact on the style and atmosphere in the FB, but in all these years I have experienced it as a setting in which the opinions of every member were well received and discussed with great attention. Obviously, our department does not work in isolation, also the relations with other departments (and in particular with Applied Physics, our Flux companion) are frequently on the agenda, as well as the interaction with the Board of the University ('College van Bestuur').

As said, my main role in the FB is to overlook the research activities in the department, and contribute to defining and executing the research strategy. Obviously, the individual research groups in our department host the in-depth experts in every EE subdiscipline by themselves, and have their own autonomy; so the intention is not to prescribe which research they should do in detail… No, it is about the general research trends in our groups, how to bring these in line, and how we can collectively make the difference in the challenging national and international research landscape. Therefore, we have defined the three leading research themes as umbrellas under which the groups can and should cooperate to make the faculty more than the sum of its parts: communication, care & cure, and smart energy. This thematic approach has worked pretty well in the recent years.

The EE landscape in the Netherlands also comprises our colleagues at TU Delft and University of Twente (where I have served

as part-time professor for nine years next to my Lucent Bell Labs position, before I joined TU/e). For EE in the Netherlands, it is important to join forces and make ourselves heard at the political level. A quite comprehensive job is to prepare for the EE Research Review Assessment ('EE Onderzoekvisitatie'), which is held at full scale typically every five years, and in between as a midterm one, and for which the past achievements and future plans have to be clearly outlined and defended in front of a committee of independent EE experts. We had one in 2011, in 2015, in 2017, and another one was scheduled for 2020 (but to be shifted into 2021 due to corona…). The gathering of all the data from our groups, both textual and numerical, to shape a convincing strategic plan for the next period, and streamlining all this in a concise but information-rich report takes quite some effort, which I could do together with Jan Bergmans and Jan Vleeshouwers very pleasantly. It also gave me very interesting insights in the 'kitchens' of our groups, which we also gratefully used to tune the research strategy with our research colleagues/ competitors of TU Delft and University of Twente. The common understanding of where the strengths and weaknesses are was certainly improved by these joint Research Assessment exercises. Moreover, it helped in setting up the recent Sector Plans in close interaction with our EE friends from TU Delft and University of Twente. Through these plans, our government provided us timely and nicely with the necessary extra financial means to appoint new staff and raise the profile of particular research highlights.

My vice-dean period has not seen calm years… As EE department we have experienced sizable reforms in the education curriculum, the yo-yoing of student numbers, the ups and downs of industry with which we are closely interconnected, relocation from Potentiaal to Flux and all the associated headaches, and we are now caught in the corona turmoil, requiring speedy measures in our education and research activities we have never seen before, etc. So, these eight years certainly have not been boring years, but have been a very exciting journey through all ins and outs of our department. It was a great pleasure for me to have served our faculty and to have been part of our Faculty's leader team, not in the least because of the open-minded interaction including some time for humor as well. I do wish my successor Guus Pemen as much rewarding experiences and fun as I have had!

Ton Koonen ■

Puzzle

With the summer break behind us, let's start the new academic year with a relatively easy puzzle, so we can get our brains working again.

In the picture below, which object is the odd one out?

If you think you know it, send an e-mail with your answer to connecthor@thor.edu and you might win a delicious pie! ■

Commissioner of online education

By: Jos Willems

"Oh no, we are all going to be without work!" is what me and my fellow Commissioners of Education of the other study associations exclaimed when we walked out of our meeting at Thursday the 12th of March in the afternoon. It was not just an ordinary meeting. That morning we received a special meeting request: we were asked to join an urgent meeting of the Student Advisory Body (SAO), in which the Rector Magnificus, Frank Baaijens, and the Managing Director of ESA, Patrick Groothuis, would give us an update on the TU/e's situation regarding Corona.

We were the first students that were informed that the university was going to close (physically) and that education was to be continued online. We were told that there would be an 'education-free week' to prepare for the online education, and no education means no work for a Commissioner of Education. As no work means more time for leisure, we started planning a fun activity with our group, to for example the Efteling or a zoo, since we would have plenty of time for that. Little did we know what was waiting for us.

Since the education-free week was used to prepare for the set-up of online education, the departments also wanted to have a student's perspective on the plans, where we as Commissioners of Education helped out. Not only the departments, but also the university as a whole wanted to know what students thought, and wanted to know the best possible ways to distribute information. I spent a lot of time this week trying to answer the many questions I received from students. To some I knew answers, but I passed on a lot to the weekly SAO meetings (which used to be monthly). This gave Frank and Patrick insights into what was not clear amongst students, and gave direct input for which information should be provided via the regular update mails and the Corona FAQ.

Since not only the education, but also the examinations would have to be held online, the university also started to think about that. During the education-free week, all Commissioners of Education were asked to help out with gathering as many students as possible for the first tests of the proctoring systems, mainly to find mistakes and other points for improvement in the system. Hereby I want to thank all students who helped in these tests, and I think we can be proud, since the EE department had the most students participating of all departments!

The first weeks after that, I had a number of meetings, mainly with the StudentBody EE/AU, on gathering information about how the online education and the plans discussed worked in practice. This was mainly done in the year councils that are organized by the StudentBody to gather education feedback, which was now even more vital than ever. In general, there were no big technical problems, but students and teachers had not yet really got used to the online education. However, I spent even more time giving this feedback to all kinds of parties: the SAO, the Monitoring Group Bachelor College (with the Dean Bachelor College, Lex Lemmens) and the Panel of Education (meeting from the StudentBody with the Program Directors); everybody within the university wanted to have feedback. I am also a bit proud of myself for having attended all of my

Figure 1: Desk at home

meetings from behind my desk (Figure 1), even though joining from my bed was tempting sometimes. Eventually, the first few weeks of the Corona crisis turned out to be some of the busiest I have had so far, with working days of twelve hours and numerous meetings being more of a rule than an exception. Unfortunately, this did not leave time anymore for a trip to the Efteling, but the Commissioners of Education were already preparing for their next rollercoaster.

The first online exam week started at Monday April 6th, and the day ended horribly. The resit of the first year course 3NBB0 – Applied Natural Sciences, which used proctoring, was just like our Efteling trip: it got cancelled. Due to an error, a lot of students were not able to log in to the second part of the exam. As a result, the exam as a whole got cancelled. The morning after, the first year students had their exam for 2DE20 – Mathematics 1. After the exam, my WhatsApp flooded with messages that students were not able to log in. To see whether there really were large problems, I made a quick survey and of the 66 students who filled it in, 30 experienced problems during the exam. With two large exams causing so many problems, around half of the students started to get more stressed for their other exams.

At the end of the exam week, I made a short questionnaire together with the StudentBody and the student member of the Department Board, to get some more insights into the programs used for examinations. This questionnaire was also sent out to students by the academic advisors. This worked really well and the answers kept coming in. Eventually 225 students filled in this questionnaire, which was amazing, so thank you all! Our aim was to keep this questionnaire really short and simple: we would ask for the six most-used applications how students rated them, with room to explain their answers. This did indeed give us an overview of how students rated the different applications as seen in Figure 2. One drawback in trying to keep the questionnaire as short as possible (since students generally don't like long questionnaires) was that we did not take into account the different courses for which the exam was taken. If one really large course had some minor problems, it would be much more evident than a small course with possibly greater problems, and have a greater impact. Though during the year councils of the StudentBody, it did indeed seem like exams of larger courses did generally have more problems, mainly because of the increased student load.

Since the beginning of this Corona crisis, I have been really involved in all kinds of ways to give a student perspective on all kinds of aspects, like the visible part for students: the online education and examinations. However, there was at least as much going on behind the scenes, away from the eyes of the 'normal student'. There have been a lot of regulations that had to be made where also a student opinion was required, for example for the BSA. At some points I lost track of some things going on, because there were so many regulations that had to be looked at. For most ones I had a few days to give feedback on, but there have been some where it was a matter of mere hours. The speed at which some regulations were passed was incredible.

For people working on improving education, this period has been crazy. Hundreds of people have been working hard to make this all possible, and a lot of them behind the scenes, far away from the view of the average student. Without our invisible heroes, this would not have been possible. I want to give a special thanks to some employees that have so often asked whether I could still give a student perspective on some case they received, as they thought it was very important to be included. Thank you Renée (Teacher Support and Quality Assurance), Ruben (Manager ESA EE/AP) and Siep (Chair Program Committee EE). Thank you to the Program Directors, the Academic Advisors, the StudentBody and our Department Board. And thank you for all others who have helped in this transformation. It has certainly been a rollercoaster, but not like any Efteling rollercoaster. I think that during the last few months I have become Thor's first Commissioner of Online Education. ■

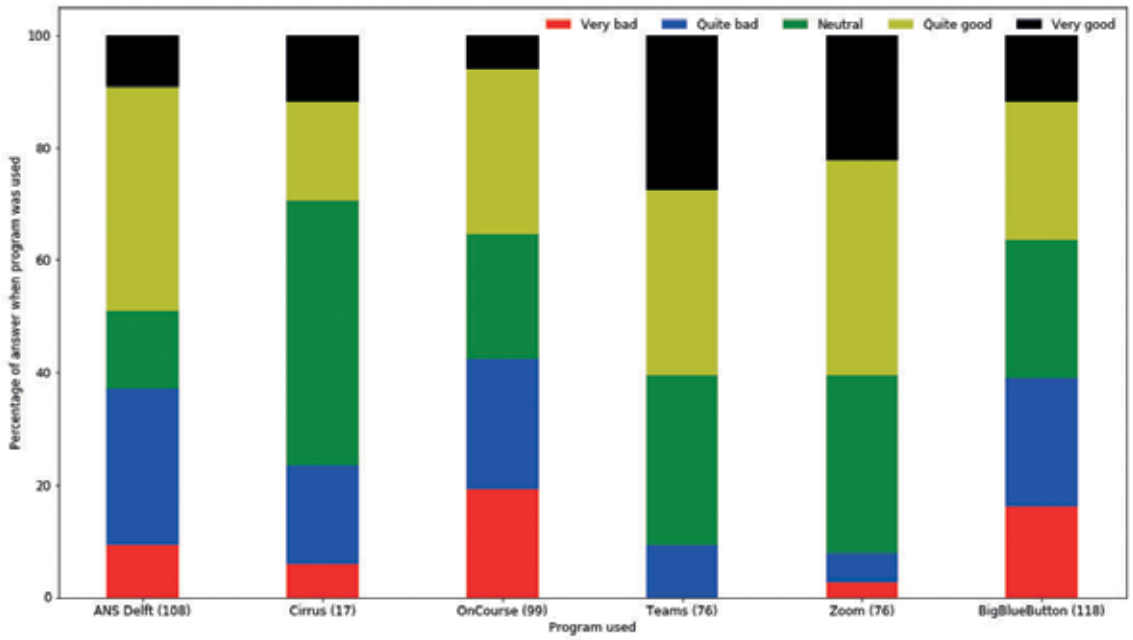


Figure 2: Online testing

Schneider Electric

Als innovatief technologiebedrijf leidt Schneider Electric de digitale transformatie van energiemanagement en automatisering in huizen, gebouwen, datacenters en industrieën. Schneider zet zich actief in voor bevorderen van duurzaamheid. Onder meer door onze commitment aan de 'Sustainable Development Goals' (SDG's) van de United Nations. Een van deze doelstellingen is volledig CO_2-neutraal zijn in 2025.

Naast onze wereldwijde commitment aan de SDG's investeert Schneider Electric in Nederlandse hogescholen en universiteiten. Een mooi voorbeeld is de samenwerking met Hogeschool Utrecht bij deelname aan de internationale competitie Solar Decathlon. TU Eindhoven deed hieraan mee in 2018 en zal ook in 2021 weer deelnemen. In de Solar Decathlon worden studenten uitgedaagd om op basis van tien competenties innovaties in de bouwsector te bevorderen. De studenten ontwerpen, bouwen en exploiteren een woning aangedreven op zonne-energie.

Een van de studenten waarmee Schneider Electric heeft samengewerkt is Harold van Faassen. Inmiddels werkt Harold als System & Architecture Designer bij Schneider Electric. Lees hieronder zijn ervaringen met het gave project Solar Decathlon in 2017.

Hoe was het om als student aan zo'n project te werken?

Geweldig! Tijdens mijn studie Elektrotechniek Embedded Systems krijg je vaak te maken met nieuwe systemen en technieken die processen kunnen automatiseren. Door mee te doen aan de Solar Decathlon werden mijn ogen geopend over de bouwsector en de innovatieslag die wij daar kunnen maken door digitalisatie te omarmen. Door de Solar Decathlon heb ik mogen samenwerken met het bedrijfsleven, overheidsinstanties en andere onderwijsinstituten. Met dit grote netwerk aan partners werkte wij aan de wereldwijde uitdagingen in duurzaam bouwen.

Hoe is het om nu als werknemer zo'n project te begeleiden?

Met de uitdaging in 2017 hebben zowel studenten, bedrijven als ook onderwijsinstellingen veel geleerd. Door het werken aan sociaal economische uitdagingen, studeren er veel professionals af die ver een een enorme drive beschikken, en veel kennis hebben over bouwen van duurzame woningen.

Momenteel ben ik studentbegeleider en contactpersoon voor de technische studenten. Enorm leuk dat ik vanuit het bedrijfsleven mijn steentje opnieuw mag bijdragen aan de uitdaging van de studenten. Door betrokken te zijn en het leerproces mee te maken, leer ik enorm veel.

Wat leert Schneider Electic uit een project als Solar Decathlon?

Vanuit Schneider Electric krijgen wij de mogelijkheid om met verschillende bedrijven in de bouwsector samen te werken. Daarnaast hebben we vanuit werving en selectie oogpunt tijdens de studie al contact met de nieuwe talenten van de toekomst.

In 2021 wordt er weer een Solar Decathlon wedstrijd georganiseerd. Voor studenten van de TU Eindhoven is dit een mooie kans. Kom in contact te staan met het bedrijfsleven en overheidsinstanties om samen te werken aan de wereldwijde uitdagingen van nu!

Jaarlijks organiseert Schneider Electric voor studenten de internationale Go Green competitie. Voor de editie van 2021 zijn we op zoek naar studenten het leuk vinden om hun vaardigheden en ideeën op de proef te stellen. Dus heb jij een innovatief een duurzaam idee met betrekking de gebouwde omgeving van de toekomst?

Neem gerust contact op met Milou van den Hout (recruiter) of Harold van Faasen.

Kijk ook eens op onze website: https://www.WerkenBijSchneider.nl ■

Opening of Het Walhalla

By: Roel Wijnands

I don't think I need to express the feelings I shared with lots of other people once I heard that our beloved Walhalla would be closing due to the Covid-19 outbreak, so I won't. I will however tell you a bit about the process we had to go through to be able to open again.

It all started with a little e-mail from the board of the Federation of Study Associations Eindhoven (FSE) with the announcement that the TU/e was currently looking into ways to allow physical activities again, especially outside drinks. These drinks would be preceded by a pilot drink, to test whether it was feasible to host these kinds of drinks outside. After a lot of consultation between us, the FSE and the TU/e, together with the creation of an outside drink protocol, we were able to successfully host the first ever Corona-proof pilot drink on the TU/e campus.

After this success, we were given the opportunity to host one drink each week. Something we hadn't been able to do for quite some time then, so it was much to our desire. Once the new regulations were put in place by the government on the 1st of July, we were even able to host more than thirty people, awesome! That was the beginning of a few outside drinks during Q4 / the summer.

Or so we thought. As you can imagine we were quite hungry to go back to the 'old' Walhalla opening hours, which meant being able to host a drink every day. After a little brainstorm about this during one of our drinks, we decided that we needed a 'Tapwagen' (see picture) for this, so, back to the drawing board we went. After two weeks of protocol making, discussions with the TU/e, and some help from our beer supplier, we were finally able to place our bar in the Markthal and to be open every day! Making sure to provide everyone with a beverage of their choice on a day of their choice.

OP HET WALHALLA!

Roel Wijnands

Commissaris Walhalla 2019-2020 ■


















Introducing candidate board

By: Various authors

Hi everyone, my name is Jurgen Kok and I am the candidate President of e.t.s.v. Thor. I am 20 years old and grew up in Sliedrecht.

After a fantastic intro, I was immediately interested in Thor, and decided to join Ivaldi. However, I was still spending a lot of time in trains to travel between Eindhoven and my parents, so I was not around at Thor that often. It was in my second year that this everyday train game dropped significantly. Bit by bit, I spent this spare time that popped up at Thor, joining the ACCI and BuEx, and of course being in Het Walhalla.

I am really looking forward to the upcoming year. I am sure we can still offer amazing experience and an amazing year for all (new) Thor members, albeit in a slightly different way as we are all used to.

Hope to see you around online and hopefully, someday, in person!

Geen gedonder! ■

Hello everyone, my name is David Blom, 20 years old and I am the candidate Secretary. I was born in a small town in Noord-Holland which I quickly traded in for a room in Eindhoven when I started studying.

Living in Eindhoven, I was able to go to a lot of activities, through which I noticed that I really enjoyed doing things next to my studies. So, as many other people, I started my Thor career by joining Ivaldi, through which I got acquainted with Thor. This led me to roll into the ACCI quite naturally. In my second year I also started to frequent the Thor rooms more often, especially Het Walhalla, which showed me how fun Thor is!

Through the stories I heard from the previous Boards, and working with committees, I became interested in doing a board year. Even though we might have to do things a little bit different, I believe next year will be as amazing as the stories I've heard from previous years.

Geen gedonder! ■

I am Lars Reijnders, 20 years old and the candidate Treasurer. In my intro, I noticed right away that Thor was an awesome association. So, in my first year, I became active in Ivaldi. At the end of my first year I got a room in Eindhoven, so more of my free time went to Thor. In my second year, I joined ACCI and the FoodCo. In these committees, I had a lot of fun and it helped me feel really at home at Thor. So, when Het Walhalla was still open, you could often find me there (some would say too often).

My interest in becoming a Board member started already in my first year, but after the first quarter of my second year, I knew I really wanted to become a Board member. I want to do it because it seems like an amazing fun year and I want to do something for Thor. The role of treasurer seems fun to me, because it sounds interesting and I think I can learn a lot from it.

Geen gedonder! ■

Hello everyone, I am Gerbrand Wit and I am the candidate commissioner of Public Relations. I am currently 22 years old and grew up in a little town called Siddeburen.

When I started with the study Automotive, I already knew that I wanted to do something besides my study. This would either be a student team or a board year. In the first year I joined the Ivaldi and really enjoyed it at Thor. In my second year I joined the FoodCo, ACCI and SkelThorCo.

With all the wonderfull experiences I had in my first two years, it became really clear to me that I wanted to do a board year at Thor. I would like to give the members the same welcoming feeling I got at Thor.

Geen gedonder! ■

Hi everyone, I am Mike Zanderink and I am the candidate Vice-President and candidate Commissioner of Het Walhalla.

I grew up in a small town called Zenderen. During my secondary school time, I learned my first things about electronics and started to explore the box with electronic components that had apparently been sitting next to my bedroom for my entire life. Ever since then, my enthusiasm for electronics has been growing and growing.

I always planned on not just studying in Eindhoven, but also having a good time while doing it. During my introduction week, I found out that for me Thor was definitely the place to do this. In my first year, I joined Ivaldi and in my second year I joined Aegir, Volundr and last but not least het Tappersgilde, where I still dream of becoming a Tapper one day.

I hope that, even though some things might not be quite the same as other years, we will still make it an amazing year to remember!

Op Het Walhalla en Geen gedonder! ■

Hello there everyone, my name is Nick Verstegen and I am the candidate Commissioner of Internal Affairs and the candidate-Treasurer of Het Walhalla.

In 2018 I began my study of Electrical Engineering at the TU/e. This began, of course, with the introduction week, where I was completely captivated by everything life as a student had to offer. In my first year, I joined Ivaldi, where I helped organize the Open House Day during which parents of first year students could experience a day in the life of a student.

Hi, my name is Lucia Kalkman and I am the candidate Commissioner of Education of Thor. I grew up in Ermelo, a small town in the Veluwe, and moved to Eindhoven as soon as I started studying here.

During the intro I got to know Thor as a really fun and nice group of very random people, and I soon joined Ivaldi. I also started spending a lot of time on floor 6, got to know a lot of the members, and started to feel more and more as a part of Thor. In my second year, I wanted to become more active and joined FotoCo, TilliT and het Tappersgilde. Because I really enjoyed doing all those things, and because of all the stories Oude Bokken told us, I decided that I wanted to spend my next year as a Board member of Thor.

I really hope to see you all at a drink, online or in Flux when that is possible again!

Geen gedonder! ■

In my second year, I joined the ACCI, the summer prom committee and, of course, most importantly, het Tappersgilde!

Of course, because of the current pandemic, life at Thor unfortunately isn't the way it used to be, nevertheless we will do our best to try to create another fun year at Thor, despite the limitations caused by the coronavirus.

I hope to see you all soon!

Geen gedonder! ■

Research at home

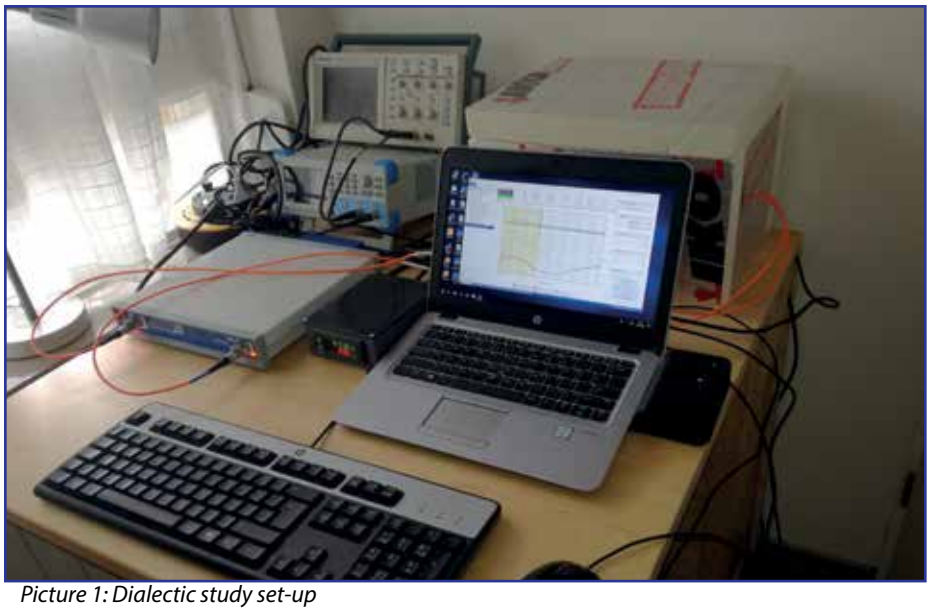
By: Various authors

Doing research at home sounds as an activity of a fanatic hobbyist, may make you think of medieval alchemists, and also has associations with the roots of some big tech companies, but thanks to Corona it is current and serious practice for several people of our staff. The home situation may not be optimal, or for some experiments even plainly inapt, but it is the only way to get any progress. Apart from that, it triggers true engineering style improvisation.

The pictures below show the experimental setups of Sjoerd van der Heide and Armand van Deursen.

Armand van Deursen – locating cable faults at home

Armand studies ways to locate faults in low-voltage power cables. Due to the increasing use of photovoltaic panels on the rooftops of houses and electric cars, these cables have more energy to transport. The added load on the distribution grid will be managed by creating a 'smart grid'. Even with such a grid, failures in the low-voltage (cable) connection cannot be completely avoided. At the same time, the impact of an outage is increasing. This means there is an urgent need to find the location of the fault. One of the techniques the distribution system operators rely on is time-domain reflectometry, or the injection of high-frequency pulses before and during the fault and comparing the different reflection patterns. To determine the location of the fault, the velocity of the pulse in the cable needs to be known accurately. The dielectric constant of the insulation material around the cable's conductor depends on the cable load through the temperature and is the main parameter influencing this velocity.

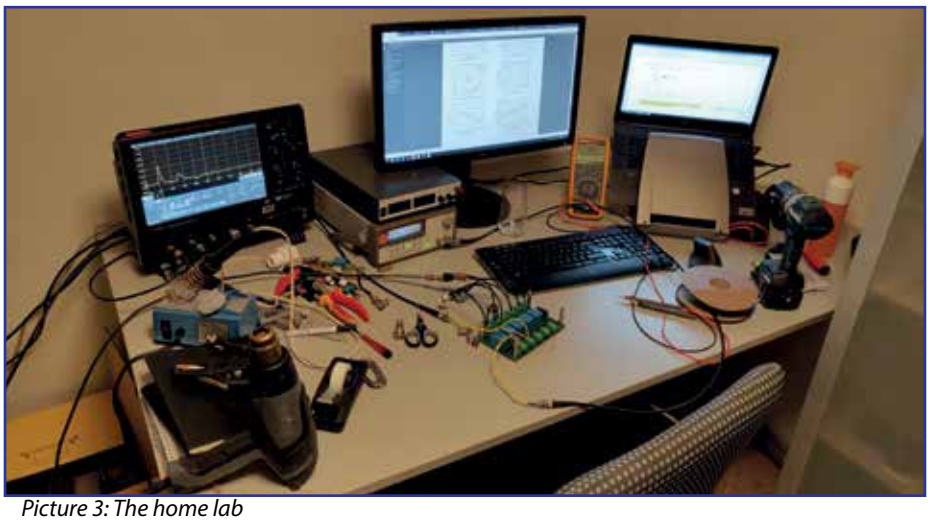


Picture 1: Dialectic study set-up

During the lockdown, Armand was able to continue doing measurements on the insulation material (PVC for low-voltage cables) from home and study the temperature dependency of its dielectric properties. A dielectric sample holder was heated by means of heating tape and a PID controller. The sample holder was placed in an insulating container that was made from insulation material that was purchased from a home improvement store (Picture 1).

Together with the Dutch distribution system operators, an experiment with a live grid is scheduled, where an artificial fault will be created and the transient change of the signal propagation velocity will be studied. In order to suppress the 50 Hz component, robust filters were designed and put in a sturdy case. (Picture 2) Testing was done from home with equipment borrowed from the university. (Picture 3).

Picture 2: 50Hz suppresiion filter



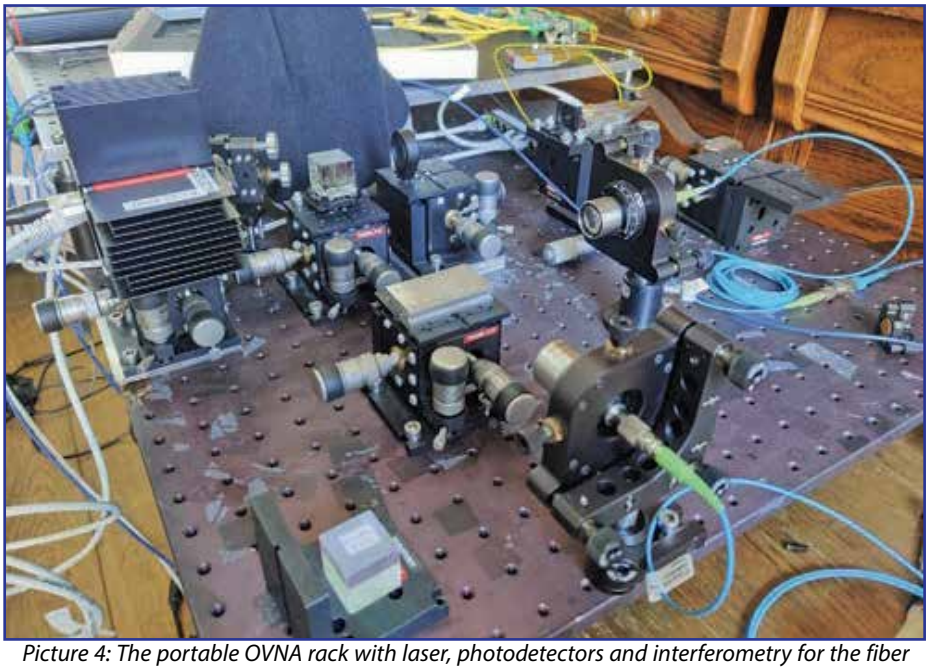
Picture 3: The home lab

Sjoerd van der Heide – portably measuring high-speed fiber transmission

Sjoerd works with John van Weerdenburg and Chigo Okonkwo on high-speed optical fiber transmission. Prior to the imminent shutdown, they managed to transfer some portable equipment from the lab to set up home offices to keep some of their research going. The work shifted to reanalyzing measurements already captured and improving the Python laboratory code-base. Luckily, they got a second opportunity to gather resources from the lab. This time, they moved some compact equipment to their "in-home" laboratory (including some pizza boxes). This allowed them to continue developing their portable measurement stations. An optical vector network analyzer (OVNA) setup was taken and set up in the home of John van Weerdenburg. This has enabled him to continue developing the instrument.

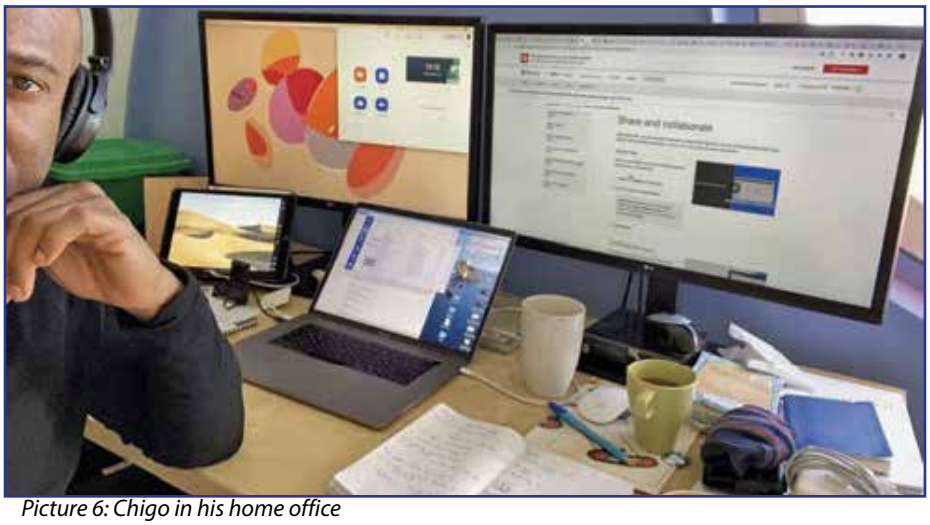
Within the home of PhD student Sjoerd van der Heide, a bicycle tire is used to provide sufficient vibration dampening for a make-shift optical table to build up a digital holography setup. This setup has been designed in collaboration with Nokia Bell Labs to be portable, so the continual development of the required digital domain processing with this setup will be very useful over the expected duration of the Corona crisis. Finally, Chigo Okonkwo is leading the activities in the high-capacity optical transmission laboratory from his home "nerve center". Chigo's in-home connectivity has slightly hampered productivity, so he has started deploying an in-home optical network as a fun way to improve connectivity between his home office and router.

(The story on fiber transmission appeared earlier in IEEE Photonics Society news, June 2020). ■



Picture 4: The portable OVNA rack with laser, photodetectors and interferometry for the fiber analysis.

Picture 5: Digital holography setup



Picture 6: Chigo in his home office

In retrospecthor

By: Joost Greunsven

At Thor, a board of the association is usually referred to by their board number, ranging from the 1st board at foundation, up until the current 63rd board. As we've recently passed the golden boundary of 50 Connecthor issues, we're closing in on 'recent' board years. In the upcoming Connecthor issues, we ask a member of the board matching to the issue number to look back at their time at Thor. What has this former board member done at Thor? Has being an active member been a benefit to life after Thor?

In this 51st issue, we kick off with Joost Greunsven, President of 51st board of e.t.s.v. Thor.

It is my pleasure, and an honour, to kick off this new article series of 'in retrospecthor'. For me it feels a bit like closing the circle, as I also had the honour to 'receive' the first edition of the Connector back then as President of Thor.

It is eight years already since I graduated from Eindhoven University of Technology, and even thirteen years since I was a board member of Thor. But despite time passing by, I still have very warm feelings and clear memories of my time as student in Eindhoven and active member of Thor. And as honorary member I still feel close to the association, although for most current active members I am most likely kind of an extinct dinosaur.

For this article, I'd like to share three important lessons from my period at Thor which have been valuable for my life after Thor.

At Thor you learn how to break rules, without breaking them

It is an often uttered complaint that within Thor many members are too rigid with respect to rules and traditions, and some more pragmatism would be welcome. And yes, I have felt the same, especially that time when the annual financial statement of Het Walhalla was not approved at a General Members Meeting because there was a tremendous difference of €0,01 (yes, 1 cent!) between debit and credit…

But this attitude of 'clinging to the rules', also leads to a spirit amongst Thor members where they pushed the limits and searched for possibilities where to effectively amend or circumvent the rules without breaking them, in order to get ahead. Like if A and B are explicitly not allowed but C isn't listed, then C (although comparable to B) is probably still allowed, right?

Experiencing the consequences of how others 'misuse' ambiguity in the rules you set yourself for an activity or a new policy is typically frustrating, but also educational, as it learns you what to improve next time. But, outsmarting others (preferably outside Thor) on their rules is simply wonderful. I still remember how my fellow board members and I outsmarted student association E.S.C during our 'kandi-period'. With our traditional kandi attire of single breasted vests and white shirts, we were not allowed access to their premises, as we wore the same attire as their 'law & order committee' (and they were apparently too incompetent to notice different colours of the vests). But on the last night of the introduction week, we managed to do gain access, by bodypainting vests on ourselves which provided us with the desired kandi look, but without wearing the non-allowed attire.

Receiving the first connecthor (2008)

These experiences have taught me that good intentions are typically not enough to make something succeed. You need to be concise in your communication and always think ahead about what could go wrong (both intentionally and unintentionally) when you organize something. These skills have been of great help to me in my work, where my current responsibility is to draft rules and legislation for the wholesale electricity market. This ability really helps to test ideas, identify where parties will/might try to break the system, and ensure that you set things up properly to prevent this to the extent possible.

JA Kritiek NEE Gezeik

Changing culture, is the hardest part of leadership

As 51st board, our key ambition was to introduce a change in culture in the association: "Minder gezeur – Meer positiviteit!" (freely translated: Less heckling, more positivity!). We wanted to establish an environment where members would be actively encouraged to deploy activities and develop new initiatives, instead of getting jeered at for their mistakes. An environment where members had high hopes and trust in the success of upcoming activities, instead of being greeted with cantankerous opinions from the likes of the muppets Statler and Waldorf.

We learned the hard way that heads-on confronting Thors' Statlers and Waldorfs was not the best strategy. According to them, we were on a mission to spread the evil disease of the 'Posityfus!'. We even had a visit from the 'Man met de Pijp' who 'safeguarded' one of the board room doors, which required two fellow board members to sleep overnight in the room to in turn safeguard its contents. Also, some of our ideas to implement the change failed miserably: The 'toffe-ideëen-potje' (great ideas budget) was left untouched, and the hole in the wall between the board room and the 'gezelligheidshok' we originally wanted to make, (fortunately) remained just an idea. But we also learned other ways that did work, such as: building up bottom-up support with individual key members, giving a voice to the silent majority who was in favour of the initiative, instead of fuelling the noisy few opposing it, and by focussing on what went well instead of what went wrong. After all, everything we pay attention to grows.

During my time at Thor, I experienced hands-on that changing culture is the hardest task of leadership and is not done overnight. This has been incredibly helpful to my life after Thor, as companies also have a certain culture and thus you face comparable resistance when changes are to be implemented within a company. My Thor experience enables me to better anticipate resistance to change, and has taught me several ways how to overcome such resistance and ensure a smooth and lasting implementation of the desired change.

At Thor you make friendships that last a lifetime

Yes, yes, this is a cliché, but that doesn't mean it isn't true. My fellow board members are still close friends, and until this day we have gone on several trips together to celebrate our friendship and rekindle old stories. The group of friends we started studying with in 2005 is coined '51+', and over time this group has been expanded with partners and several children. And every time I return to Thor to take a drink in Het Walhalla, it feels like coming home and the evening is too short to chat up with all friends and acquaintances about how our lives have changed.

But the moment when I realized Thor was really a major part of my life, was my wedding. On the eve of the ThEW, 35 active members from Thor were there to celebrate love with my wife and me. I still remember the astonished faces of friends and family when Thor entered in full suit and the (in)famous 'Geen Gedonder' rang through the hall. But most of all, the utter joy of having so many people together with who you shared so remarkable moments within Thor lasts a lifetime. I wish all people at Thor, active and not (yet) active, to someday experience this feeling as well. ■

Name:	Joost Greunsven
Current job:	Electricity Market Developer at TenneT
Studied EE:	2005-2012
Activities at Thor:	OHD, ACCI, board (president), ThEW, Dies, BuEX, Yearbook, EB Committee, ToeCo
Other:	Awarded honorary membership ('lid van verdienste') for all contributions to the association

Entrepreneurship

By: Horst Fietje

The educational landscape is changing, and entrepreneurial challenges are playing a big role in this. In order for our competitive tech-based working culture to survive it is key to support startups, scale-ups and entrepreneurial-minded students as they form the fastest growing job engine in the Netherlands. This change in mindset is not always easy and needs a fresh and critical view on the current system. Succeeding in changing this mindset will not only enable us to reach the 2030 vision goals of the TU/e, but it also improves our position and impact as a university.

Different mindset

Educational programs are changing to a more challenge-based learning approach. This involves students to think in a multidisciplinary team about solutions that are environmentally, socially and economically sustainable, which aligns with the 2030 vision of the TU/e. The difference in mindset? You're not solving a problem that was thought of by someone a long time ago and hasn't changed since. You are asked to identify a real problem and come up with a solution. And that's exactly what entrepreneurship is about. Identifying problems/ challenges and treating them like an opportunity to come up with an environmentally, socially and economically sustainable solution. Of which the latter one is most of the time the biggest driver.

CES 2020 exhibition with Prince Constantijn in Las Vegas

Why entrepreneurship is important

According to the economist Joseph Schumpeter, technological innovation is the real source of economic growth and welfare. In this time of technical revolution, startups and scale-ups play a crucial role in bringing research to the market to solve societal challenges. Also, our competitive position as a physically small country is highly dependent on startups and scale-ups. Startups and scale-ups are the fastest growing job engine in the Netherlands: they play an essential role in the attraction and conservation of talent and expertise. Entrepreneurship is at the core of this all and therefore it is important.

Entrepreneurship while studying

At universities this research and innovation takes place, so it is the perfect place for entrepreneurship, startups and scale-ups right? Well, it should be, but it is not at the moment. The current situation and environment make it hard for students to combine their studies with their entrepreneurial life. One and a half year ago, when I joined the co-founders of XYZ Dynamics, I was still studying my bachelor Automotive. Luckily the core team, who did quit their studies, was able to continue building the enterprise while I finished my studies and met with them once a week. But not everyone is in that luxurious position. There exist countless examples of student-entrepreneurs that quit their studies in order to continue building their startup. My brother Zep Fietje and fellow entrepreneur Steven Nelemans (co-founder of Amber) both quitted their studies because it was impossible to combine it with their entrepreneurial career. Especially in the beginning phase of a startup, the economic viability can be uncertain. Combined

The challenge-based learning approach

with the very dense study program, frequent exam periods and high enrollment costs, many students opt to put their studies on the back burner and cancel their enrollment.

Outlook

Knowing that entrepreneurship plays this vital role in the Dutch ecosystem, I personally think that we as a university should do more to promote and enable students to pursue their entrepreneurial career. The TU/e offers special regulations for students that pursue a top-level sports career alongside their studies, even financial support is available. Why is there not such a regulation for student-entrepreneurs that pursue their entrepreneurial career alongside their studies? Furthermore, I think we should seek for a better collaboration and cooperation between university-level and HBO-level institutes. Within startups and scale-ups the combination of theoretical and practical knowledge is most of the time the magic link. Let's put our political games aside and strive for the ultimate synergy between the two educational levels.

Luckily, there exists great initiatives that support the entrepreneurial mindset at universities and in Eindhoven in particular. The Innovation Space, Innovation Lab and the student entrepreneurship community KICKOFF EHV are great examples of organizations that actively support student-entrepreneurs. I can recommend everyone to partake at least once in one of the activities organized by KICKOFF EHV and come to new insights. ■

Student-entrepreneurship event FuckUp Night organized by KICKOFF EHV

Travel column

By: Sander Verdiesen

Recently, I visited the tiny island nation of the Faroe Islands, with a population of only 50,000. Technically part of the kingdom of Denmark, it has a high degree of autonomy. It has opted not to become a part of the European Union, which can make some laws fairly complicated. Their reason for opting out, I will explain later. The eighteen islands that make up the Faroe Islands are all stunning, and allow for beautiful vistas. Moreover, it is an adventurer's paradise with activities such as rappelling, mountain biking, cliff jumping and much more. Next to this, the waters surrounding the Faroe Islands boast some very good fishing grounds, which is also the Faroe Islands' main export. Unfortunately, the Faroese have become famous in recent years for a different tradition.

In order to get to the Faroe Island, we boarded a ferry from the north of Denmark. However, before we were allowed to board we had to take a test proving we did not have COVID-19. The Faroe Islands are one of the few countries in Europe to have reported zero COVID-19 deaths. Partly, this is due to their isolation, which makes it relatively easy to check all arriving travelers. However, something else made the Faroe Island more prepared than other parts of Europe. Several years ago a different virus was wreaking havoc to the fish population around the Faroe Islands. Being their main source of income, the Faroese invested greatly into testing facilities in order to track and combat the pandemic. When the new coronavirus came along, these facilities were quickly converted, and they were able to effectively stop the virus from spreading.

Very pretty gorge in the town of Gjogv

After 36 hours at sea, the Faroe Islands slowly creep over the horizon. The Faroe Islands can also be reached by plane, but we opted to take the ferry allowing us to take our own car and supplies. Given the remoteness of the country, the quality of the infrastructure is impressive. Most islands can be reached by car using bridges and two sub-sea tunnels. The more remote islands are connected by ferry and even a helicopter service. This

Some puffin birds enjoying their freshly caught fish

The grindadráp that we witnessed in Hvalba

ensures that from the capital you can get pretty much anywhere within two hours. The only downside of the infrastructure are the infamous one-way tunnels. These tunnels are generally unlit, can be several kilometers long and only allow for one car to pass at a time. This can result in some rather long waiting times.

The main reason I wanted to visit the Faroe Islands is for the incredible views. It boasts steep cliffs, lakes, waterfalls and green meadows in abundance. And there are sheep almost everywhere you look, some say there are more sheep than people on the Faroe Islands. Its scenery has featured in many movies, and also on a Windows 10 screensaver. Aside from the scenery, the wildlife is also quite amazing. One of the largest Puffin colonies resides on the westernmost island of Mykines, together with many other species of birds.

Unfortunately, the large influx of tourists during recent years has caused a disruption to the usually quiet breeding places of some of the birds. Luckily, the government has realized this and is trying to curb the number of visitors by asking for a hiking fee. Possibly, they will limit the number of visitors in the future to a fixed number. This shows that modern-day mass tourism definitely has a dark side. All over the Faroe Islands, people told us stories of tourists wandering into their gardens, and sometimes even into their homes, without permission. I believe that you should respect the rules of any place you visit, and that you should not try and bend these rules. Not even for a very pretty photo.

Throughout our stay we had been wondering why the Faroe Islands have not joined the EU, while clearly being a well-developed western country. After being invited into a local fisherman's home, we learned the answer. Apparently after joining the EU, any other EU member is allowed to fish in your waters. Given that around 95% of the country's exports consists of fish, this would be devastating for a vulnerable country such as the Faroe Islands.

Unfortunately, any country has a dark side, and for the Faroe Islands this definitely is their whaling tradition. Every year the Faroese kill roughly 800 pilot whales and dolphins, which is referred to by the Faroese as 'grindadráp'. During our stay, we were unlucky enough to witness a grindadráp with our own eyes. As the bay slowly turned red, almost 300 whales were slaughtered. However, not to justify the practice, the method used is not that different from any slaughterhouse in Europe. In my opinion, any country or organization condemning the grindadráp should just as well condemn any industrial slaughterhouse. For more information on the tradition, I can recommend visiting the website whaling.fo.

I can recommend anyone to travel to the Faroe Islands, but please keep an open mind and be respectful. It might just be the trip of a lifetime! ■

Artificial Intellegence at EE

By: Jan Vleeshouwers

Everyone seems to be involved in Artificial Intelligence (AI) nowadays, but in the context of Dutch higher education, we are currently doing something special.

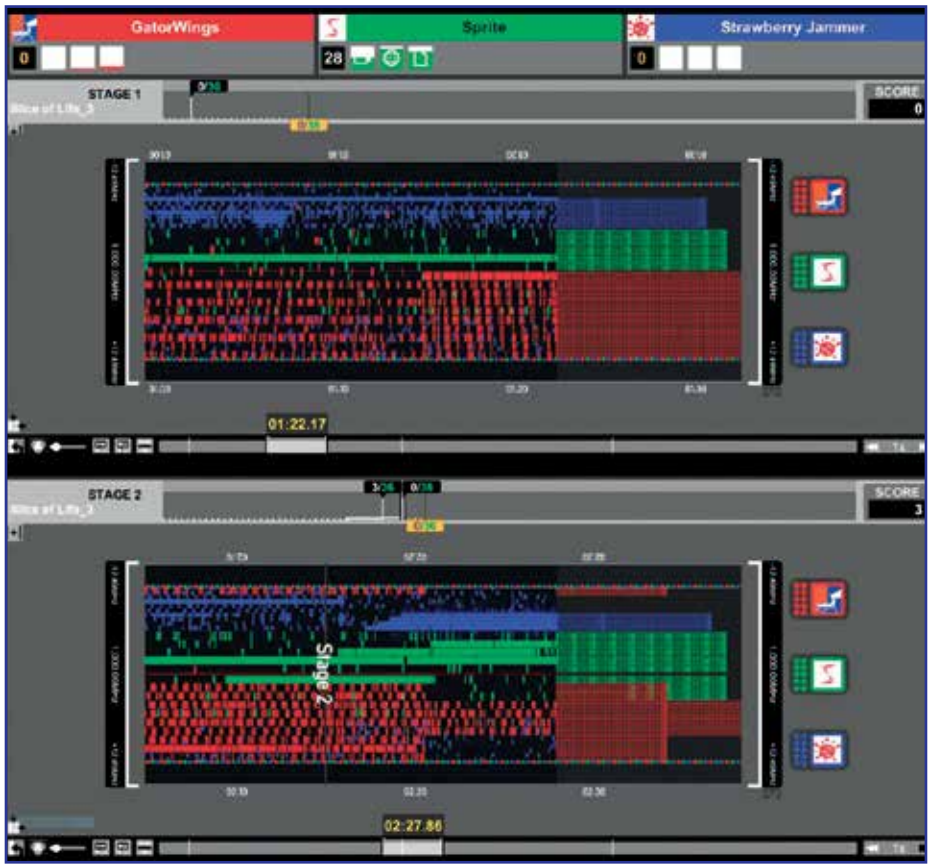
There is a lot of development activity in AI theory and AI tools (at TU/e mainly concentrated at the department of Mathematics & Computer Science). At the same time, computational powers have increased, which have brought a range of AI-applications within reach. The largest application areas so far were outside of engineering, but that is changing. The underlying essence of generating models from a host of unstructured data (machine learning) is perfectly well applicable in engineering. In fact, we are already doing that. Peter Baltus' smart marbles generate data based on which a next generation is developed that performs better. The low yield of the photonic chip production on the InP platform is addressed by applying machine learning to the large base of process data. Optimal integration of electrical machines and power electronics relies on AI-related tools. Configuring and maintaining networks, for communication as well as for energy, increasingly relies on processing huge amounts of unstructured data. Low-power sensors employ data reduction algorithms created via machine learning tools. In the field of physics, AI can be the research tool which allows studying more complex atomic scale interactions. Control system research would be severely limited if not for AI. Summing up: where our current engineering efforts run into complexity limits, AI tools may provide an option to go one step further.

Next to that, the faculty of Electrical Engineering is also involved in AI via the topic of computing. The ES group researches computation architectures which are specifically suitable for handling AI algorithms. Patty Stabile (see previous Connecthor) is looking into optical circuits for performing AI computations (neural networks). Summing up again: the field of Electrical Engineering is into AI up to its ears. Essential in this is the two-way traffic between AI core development and complex engineering application. Engineering applies AI tools and AI develops on engineering experience.

Knowing this, we designed the 'Artificial Intelligence Engineering Systems' (AIES) program last year, which is available (as of now) as a track within the masters of Electrical Engineering and Mechanical Engineering. We are currently extending the initiative towards an independent interdepartmental master in the area of AIES. The program is going to be developed by the faculties where the topic of AI is most prominent, but in such a way that the others are able to join whenever they wish to. This setup, regarding topic and breadth, is unique in the Netherlands, and as far as we can tell there is no European equivalent either. We are eager to start the program as soon as possible, but we need some patience. The Dutch procedure of getting a new program accredited needs a careful design, with a subsequent review which will take more than a year. This results in a planned starting date of September 2022.

In the meantime, there will be other initiatives to structure AI education. A dedicated elective package is desirable, as a step-up for students to get acquainted with AI, and perhaps as a prerequisite for the AIES-master. And what about student teams? Fruitpunch is working hard towards that, but we also have the Innovation spaces, and – last but not least – the AI institute (EAISI), which may for now be focusing on research, but why not take a lead in AI education as well?

AI is making us look forward to some significant changes in our university education. ■



It's not that bad

By: Tom van Nunen

Much has been said about the whole Corona situation we're living in right now. I want to focus on the positive things it brings us. And I don't mean the insight that working at home is a thing, but rather a bit farther from work.

A lot of things that we took for granted now suddenly require planning and consideration. Some things even require major changes. This might bother you and sound annoying, but in my opinion, it can also bring good things.

On a regular Friday afternoon, at around 5 PM, I would switch off my computer and head for Het Walhalla, without an actual plan in mind; who knows who I'll meet, who knows where we'll eat, who knows where we'll end, and who knows at what time. Maybe at a friend's place or in the city center, everything is possible.

For a few months, this has simply not been possible. We couldn't come together with too many people, and we couldn't visit Het Walhalla or any other bar or restaurant. All these things that normally went without saying, suddenly couldn't happen anymore. We had to actively think about when, where, and how we're going to see other people.

This is wat makes it interesting in my opinion, because it can result in something really good. I think it results in us appreciating the time together better. Having people over is now valuable. Social moments don't randomly occur anymore. I can only invite a few people to our place, and the need of face-to-face contact is huge.

I can honestly say that I truly appreciated the improvised Friday-afternoon drinks, it felt great to see a few faces again, and I think we certainly had nights to remember.

Besides limiting the number of visitors, we also made sure we wouldn't have different people every week, to limit the risk of these gatherings. So, I expect that people will understand if they weren't invited, and don't feel ignored. It was simply the wiser thing to do. I'm sure that we will have plenty of chances to make up once we gain more control over the situation.

Of course, there are downsides about the situation, there always are, and certainly remarks can be made about how the situation was handled. It feels like there are people who spend all the spare time they have – and unfortunately, the corona situation has increased that amount for some – highlighting all the negative stuff they can find. It is important to realize oneself that, when some people rant about something on social media, this does in no way mean that this reflects the opinion of a significant share of the population.

In that sense, the situation has once again made it clear that there will always be people who look for complots against them. They look for them in the craziest places. And of course, when you search long enough, you will eventually find stories backing up even the weirdest idea.

What has also become evident once more, is that reading a lot of corona-related articles does not inherently make oneself well-informed on corona. In that sense, I find it both hugely fascinating and slightly worrying at the same time to see the Dunning-Kruger effect live in action.

If you search for the good things, I think that you will almost certainly find them, no matter the situation. They might not always be huge, or it might take you a little while to realize, but it will be a joy to find them. I guess that is my take-home message. Please stay safe and don't forget to enjoy the little pleasures. ■