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DisCover



COLOPHON

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Cover

EDITORIAL

After five rotations around the sun, a new issue of DisCover has finally landed in Groningen! Bringing back DisCover has been a real journey. After a prolonged hiatus, a group of enthusiastic and talented editors, writers and layout designers have assembled with one goal in mind: to continue the story of the Martini rocket. Like all journeys, we've had our peaks and valleys - uncovering the inner workings of the committee, collecting and editing all those compelling stories, and bringing our vision to life.

As we were striving to build upon the foundation laid by the previous issues of DisCover, we envisioned the process as continuing a story, a narrative, an ongoing *journey*. We thought about the path we are heading towards in our journey, recent technological advancements, the new and exciting projects of Cover members, and some thinking about the next chapter in their lives after graduation. We also thought about the starting point of our journey, and the people who witnessed Cover history being written. But, we have yet to reach our final destination. This issue is merely a stop on the many adventures the Martini Rocket will embark on.

As Cover reaches its 30th anniversary, it is only fair to look back at how far the association and its study programs have come through stories from special former members alongside the thrilling experiments and experiences of current Cover members. We also took a peek at Cover's journey moving forward, involving initiatives to foster a more sustainable future as well as the paradigm shift in education due to emerging AI tools.

So grab your hot beverage of choice, buckle up, and prepare to embark on a visual expedition through these collected tales - glossily confined within the following pages. Taking off in 3...2...1!



Alexandra Thudor



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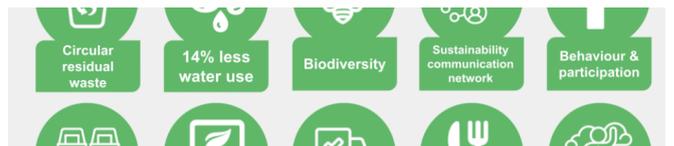
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THE BOARD'S LETTER

Dear reader,

What a trip it has been! Doing board has brought me all around the Netherlands and allowed me to meet new and fun people. It's given me the opportunity to do new things and bond with my fellow board members. Originally I chose to do board because I wanted to do more for Cover. Board was also unlike anything I've ever done before, so I wanted to try something new!

I've learnt a lot from doing board and have come a long way since the start of the year, both in terms of how I handle and stay on top of my work and personally when dealing with other people, both in a good way. I have created bonds with the other members of my board that I wouldn't have otherwise made and enjoy spending time with them and working with them.

As the saying goes: "It is not about the end goal, it's about the friends you make along the way." This is especially true for board: there is no goal, there is no pot of gold at the end of the rainbow. Board is all about the experience you make and it has been a very enjoyable journey so far!

I am looking forward to the second half of the year and all the memories there are to make in the future!

On behalf of board XXXII "Esto Quod Es",

Luca Drouillet



On the journey of Cover

Part I



dr. Paul Vogt is currently an assistant professor at the University of Groningen with a profile in education, teaching both the theoretical and practical components for the courses Social Robots Practical (AI Bachelor's course), and Human-Robot Interaction: Social Robots (AI Master's course).

However, many Cover members might know him already as one of the founding members of Cover! Join us for the following interview to get the backstory behind the start of our student association.

Can you tell us a bit about yourself?

I like doing theatre, learning how to act. I have been taking acting courses for eight years already, mainly in improvisation, but I also perform in plays. It's a fun way of doing something else other than work, to get your mind off work. It's good fun! Besides that, I like to travel. My favourite hiking locations are in Scotland. I lived in Edinburgh for a couple of years, where I also did a post-doctorate.

You were part of the first ever board of Cover. How did Cover come into existence?

In '93 we were a group of 10 to 15 students starting in the new program called 'Technische Cognitiewetenschap' [Cognitive Science and Engineering, now called AI]. With that few students, we all knew each other. We saw each other a lot - that was nice. We were very much motivated by the team that organised the new

program, like

Niels Taatgen, Petra Hendriks etc.

They formed a very nice team and they got people from different faculties together [philosophy, linguistics, and psychology] to teach about cognitive science and AI. This was a new area. We were told: "You are pioneers in cognitive science and AI".

A new study would also need a new study association. I can't remember if that was suggested by one of the teachers, or if us students thought of that. There were only four people part of it at the start, reluctant to make it official. It was an association but very informal, organising pub nights and curriculum support. That was about it. Everyone came from different backgrounds, myself from physics, but we all had similar interests. We had meetings but not GAs [General Assemblies], again very informal - have fun together, get to know each other, talk about cognitive science -

and at some point I was part of the activity committee. Other students wanted to set up a formal association with rules and all these kinds of things. By then there were like 25 people - why bother going to such lengths for such few people? Cover was set up informally anyway, and I was happy to continue with in the activities committee. We started writing the statutes and all kinds of things, but we didn't finish writing the statutes - the next board did.

“ We were told: “You are pioneers in cognitive science and AI”. ”

Where was Cover located?

Cover didn't have a physical location at the time - the central hub was at Heymans building so we had most meetings there and at peoples' homes in the evening. There were a couple of famous people invited to give talks at the university though - John Searle, Margaret Boden, and Paul Rosenbloom - that was all very exciting. There was a program on television called “Een Schitterend Ongeluk” [“A Glorious Accident”] with a series of talks about science featuring Daniel Dennet [among others] which motivated us and intrigued us a lot. How can you build systems to do that? Those were things I remember we discussed about a lot.

How was student life in Groningen back then?

I wasn't a member of a student society, most students were back in the day. We also had a computer lab in Heymans in the cellar without daylight, a Unix system, that we could use. There weren't that many computers, as they were slowly entering society. We worked with floppy disks - I might have them but I can't read them anymore. We were among the first people to use the Internet and build internet pages, so quite a few students started a web company.

What made you pursue a PhD?

When I was studying, I liked most courses (though I didn't like linguistics a lot). For instance, I liked autonomous systems - there I learned about behavior-based robotics. I worked on my Master thesis in Brussels with Luc Steels, who was one of the gurus at time for behavior-based robotics in Europe. There was

a publication that came from my Master thesis work, which is still my most cited paper **[full paper available below or via this [link](#)]**:

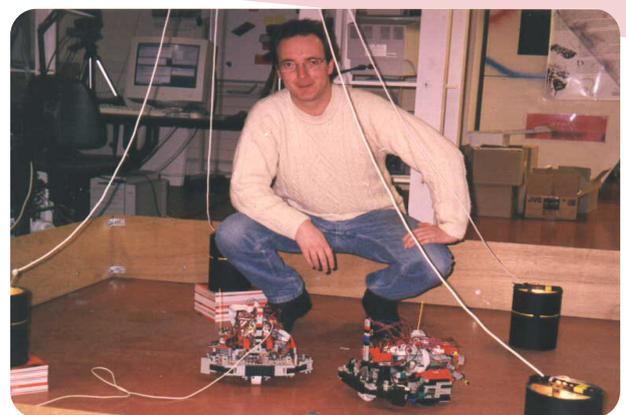


Steels, Luc, and Paul Vogt. “Grouning adaptive language games in robotic agents.” *Proceedings of the fourth European conference on artificial life*. Vol. 97. 1997.

I wasn't even thinking of doing a PhD, but through this work I began considering a completely different field of study towards studying language evolution. I learned about his ideas on language evolution, where he took a dynamical systems approach, and became very interested in language learning. If language is spread from one generation to the next, the next one needs to learn it. How does this work? Luc Steels offered me a PhD position to continue working on these kinds of questions, and I was happy to accept.

What did you end up working on for your PhD?

I did my PhD project in modelling language evolution on mobile robots. We had them scan the environment one by one, and communicate with each other through radio signals. At that time, the technology for radio signals wasn't that advanced - I think it was only in its first generation. The robots started the experiments without any formal language and meanings, so they had to learn them though “language games”. We gave them the protocol for communication, and from there they started building their own language. In order for the robots to come up with shared lexicons, they needed thousands of interactions to name just four objects.



Taking turns (one robot was a speaker, one was a listener), they learned a shared lexicon by giving each other feedback on object categorisation by pointing at the right object that the speaker was referring to.

We had very minimal robots at that time. They were self-built LEGO robots with a self-built motor-board. It was very cumbersome - they had very simple sensors, like light detectors, and they didn't have any cameras or anything like that. There was only 1kB of RAM for the computer in the board. At some point, there wasn't enough memory and we had the sensor data sent to an offline computer with only 1 MB!

The basic idea behind our research is to investigate how language could evolve in physical systems that need to develop their own lexicons in the real world, with a lot of noise and uncertainty about the meaning of words. The robots had to negotiate what the meaning of those words were – something that humans had to do too during evolution!

I currently focus on how we can design social robots to support humans with various tasks through social interaction. For instance, supporting children learning a second language using robot tutors.

What would you advise students who wish to pursue an academic career?

Create your own opportunities. If you would like the work with some people, get in touch with them - that's at least what I did. Be proactive and try to find a good potential supervisor, and show them that you thought about things. Be ambitious and determined, but also be patient - and most of all - be yourself and have fun!

To find out more about Paul and his captivating research, you can visit his personal page:

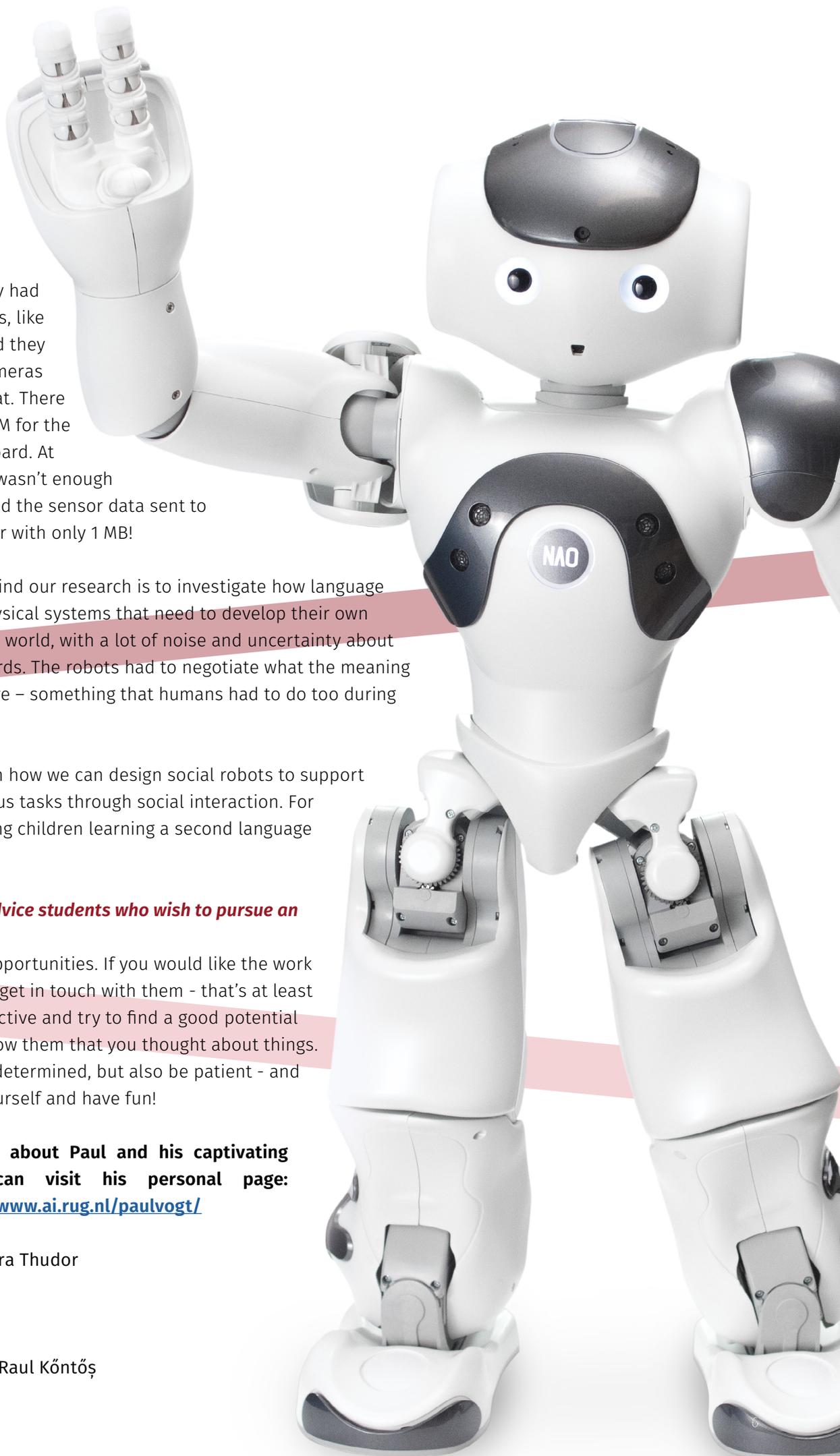
<https://www.ai.rug.nl/paulvogt/>



Alexandra Thudor



Eduard-Raul Köntöş

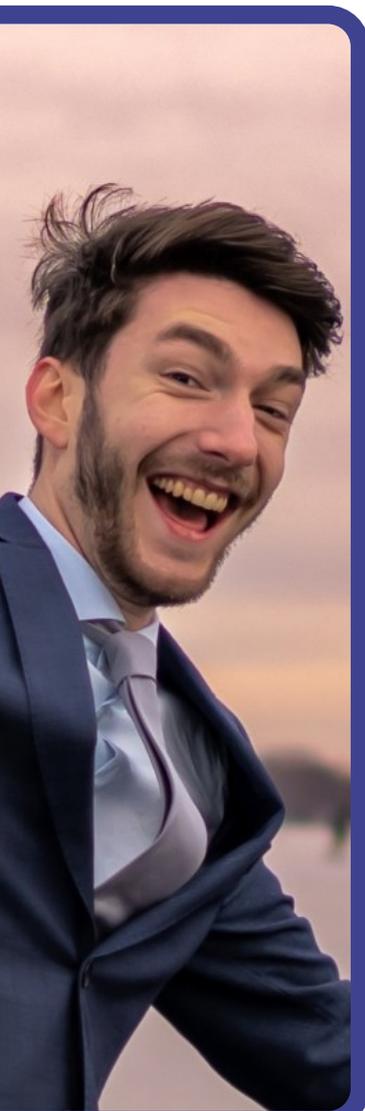


MAKING YOUR VOICE HEARD

A TALK WITH STUDENT REPRESENTATIVES

Making a change in a system as complex such as the Faculty of Science and Engineering (FSE) is no easy task. Have you ever wondered how your views and suggestions are represented within the FSE? Or how your course evaluations have an impact on the quality of education at the FSE? To answer these questions, we talked with three student representatives tasked with making your voice heard!

NIGLAS BRAND Faculty Council Member



What is the Faculty Council?

It's the co-consulting organ of the Faculty, and it's the highest representative body students can get into next to the Faculty Board - but that only has one student and it's very much a full time job.

As Faculty Council members, we discuss and approve documents, we bring up topics for the Faculty Board to discuss, and give advice by elaborating on matters within the faculty. These documents are policies and guidelines - basically rules created by the Faculty Board to prevent a monopoly of power. The Faculty Council consists of nine students, and nine staff members. There are several committees within the Council to address issues such as communications, financials, research, education, and organizational matters alongside personal committees.

As you can see, the Student Assessor has actual policy-making privileges!

What are the key roles of a Faculty Council member?

We go through a lot of documents, such as those outlining teaching and exam regulations, funding policies, energy costs etc.

The meetings are split into an unofficial and official meeting. The former were initiated in 2018, where the student faction meets up to read through the required documents and discuss any questions they might have. The Student Assessor [from the Faculty Board] also participates in order to answer any of these questions - any new or unresolved questions are compiled in a document to be shared with the Board. The latter is a formal meeting with the whole Faculty Council involving both student and staff factions.



We also have Faculty Board meetings, where we present all the questions and documents we prepared previously to the Board. There is also an "Any other matters" section in the meeting agenda if there is extra time, where you can bring up any unaddressed issues to the Board - these are noted down in the minutes which can be referenced in the future.

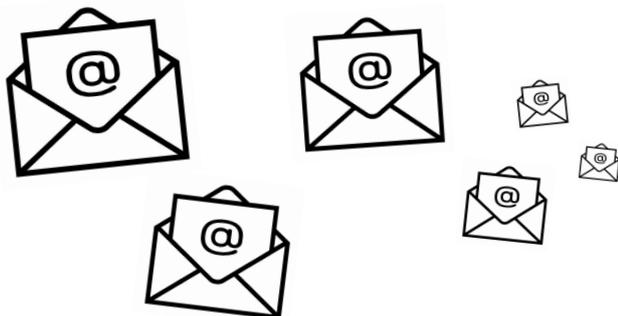
In terms of committees within the Faculty Council, you can only chair the Communications or Research and Education committees as a student. The Chair of the Communications Committee is responsible for creating an agenda for each Faculty Board meeting, preparing any questions or discussion points to be addressed within the meeting, and noting down any answers to these points from the respective Board member. The Chair of the Research and Education Committee can then contact the Vice Dean of Education to answer any of these questions before the Faculty Board meeting. Lastly, we have the Chairperson of the student faction, who is not part of a committee. They make preparations, communicate with other bodies, handle elections, and respond to questions on behalf of the students.

What inspired you to do it?

I wanted to get an insight into how the faculty works, because the university is a kind of company. As I am interested in running and managing a company eventually, this was a beneficial step to take towards gaining these insights. The Faculty Council and the Faculty Board are very cooperative, which is nice!

What are the skills you have gained through this experience?

As the Chair of the Communications Committee, **my managerial, formal communication, time management, and organizational skills have all improved through this experience.** These skills are especially important when communicating with the different teams, groups, and organs of the faculty. Being part of the Faculty Council has helped me gain a different perspective on research and education by learning the technical differences between degrees, how these different degrees accommodate for different things, and how the whole faculty accommodates all Bachelor programs.



What skills do you need for being a council member?

Show initiative and ambition - that you want to do something. You need a form of assertiveness, and to be clear in your communication. You don't want to be a member who just participates in meetings, does not do anything, and is just existing - you want to be clear with your goals and initiatives. In unexpected situations, you also need to show flexibility and adjustability - this includes attending emergency meetings within the Council, where the Board prepares some actions to take for Council members to approve as soon as possible.

What are some challenges you faced?

As demonstrated by not having elections last year, we needed to increase the visibility of the Faculty Council to students and attract more candidates. This was done through promotions on the announcement TVs around campus or distributing posters. We also updated our website for this purpose - a new addition was to include pictures of Council members. We still need a more appropriate, shortened URL however. Another challenge is that we don't have the power to actively change things - we only have a passive influence on faculty affairs as Council. We can only approve, disapprove and give suggestions - the Faculty Board is the one that makes all the decisive choices. With this in mind, we need to be very smart with our choice of words to instigate the changes we want. This year for example, we had a lot more leverage towards improving the student-to-staff ratio by pressing for more teachers and professors. We also pushed for publishing lecture recordings. After corona, the rules shifted towards an area where professors could do whatever they wanted. Of course there are multiple reasons why professors wouldn't want to record their lectures (including privacy, or student attendance), so we as Council are still deliberating with them on how to proceed.

What are your favorite aspects of this responsibility?

Being taken seriously as a student and having this influence, as the Board is dependent on our decisions - if we say "No", they cannot do the thing. Also, I like the hoodie that I got as a Council member - it's very nice!

LAURA MARIA QUIROS GONESA

Artificial Intelligence Programme Committee Chair



What is the Programme Committee?

The Programme Committee is for quality assessment in the program. To uphold this quality, the committee is formed partially from teachers and students. This ensures both students and staff are represented and heard when programs are redesigned, which is especially important for new subjects, and subjects that recently changed teachers. With this in place, students who just arrived to the program know that if the class isn't good that year, they can rest assured that it will not remain that way

for long. ***The Programme Committee is always looking to improve our programs!***

One of the most important factors towards the Committee's success is that we need enough evaluation form responses - ***if we don't have enough responses [more than 5% to 10%], we cannot do anything.*** The sample is simply too small to do something: numbers matter! We still are able to obtain general feedback though - besides the numbers, we get the opinions of people by just approaching and talking to them.



What are the key roles of the Programme Committee Chair?

As Programme Committee Chair, I have a higher level of contribution to student representation - not only because of increased participation in meetings. This includes meetings with the Curriculum Committee, which is the higher level that approves the sugges-

tions of the Program Committee when they are more important or imply a change on a bigger scale. Also, I participate in faculty meetings. In summary, my role as Programme Committee chair implies that I am the student's voice in the program when it comes to the curriculum.

What inspired you to do it?

In my personal background, I have experienced not having sufficient student representation back in high school. Teachers did whatever they wanted, and as a student you could not do anything about it. ***As a student who values student representation, I tried to defend other students when it came to unfair actions by teachers, and represent the students who had no voice otherwise.*** I think this kind of representation is important, not only for fellow students, but for yourself - you get to know the subjects better, how they are, and get to know the teachers better too.

What are the skills you have gained through this experience?

Being able to informalize a very formal kind of job. It is no doubt a serious job to represent students and give subjective opinions, as you need to make sure what you are saying is very rational and formal. Being able to make it more informal by talking to other people in the Committee and teachers with trust and confidence can be hard at times, especially as a student. However, it is not impossible - getting over that fear by making it fun and informal has been a very useful skill that I gained. When recruiting new members to the Programme Committee, an important aspect of the interviews is to ensure that students are not afraid to communicate with authority, and are capable to do that for the sake of the quality of the program.

What are some challenges you faced?

A big problem is the lack of responses to the course evaluations - hence we reformed the format of the evaluation to have less questions, and more open-ended questions. This new format is still under evaluation, since it was very recently implemented. As for within the team, standing up to authority seems to be a challenge faced. We ensure that students of the program are able to stand up for themselves, so fear

of authority is not that present - you gain confidence during your time there.

What are your favorite aspects of this responsibility?

I like talking to other Programme Committee members from other degree majors. Even though we all do the same job, we sometimes have different problems and views on what is important to the students the across different degree programmes. The faculty

meeting was especially fun because they brought all the Program Committee members together, put us in groups, and had us talk about how we think the Programme Committee could improve what was more important for us - how we recruit, how we promote, and how we evaluate. The variance of answers across different Programme Committees was very helpful on how to improve our own quality assessment.

GHANNA DIAS PERERA

Computing Science Programme Committee Chair



What are the key roles of the Programme Committee Chair?

As the Chair of the student faction for Computing Science, and Vice Chair of the faculty-wide Programme Committee, I take care of a lot of administrative duties. The Committee overall is fairly relaxed - staff know you and trust you, so you feel comfortable making requests at meetings, and there's no strong hierarchy within faction as we all have roughly the same responsibilities.

What inspired you to do it?

I felt like people were quite cynical about the Computing Science major, so I wanted to bring improvements to it. My general

appreciation for academia also motivated me, as I wanted to improve some courses that I took myself.

What are the skills you have gained through this experience?

My roles involve a lot of soft skills, which I already developed from doing my Master's in Australia. ***This really helped me feel more comfortable talking to staff members and authority.*** Practicing how to interpret feedback has also been valuable - students generally don't give very specific feedback, but I usually know what to suggest to the faculty from that feedback.

What are some challenges you faced?

Collecting feedback. I take a proactive approach to collecting feedback through my TA position, availability in the Study Landscape, and conversations with my network of friends, . However, it is challenging to interpret the amount of feedback given by different levels of the degree - there is no perfect representation of the opinion of the whole degree. It is also hard to follow up on evaluations, so the main challenge is being unable to directly talk to these people.

How are you trying to increase the visibility of the Programme Committee?

By taking the initiative, like going to a class with a large attendance to introduce myself and what we do. We as Programme Committee also go to the Intro Day to introduce ourselves, but students don't seem to care about it that much. Hopefully next year we will have a larger budget for posters, and little events like pizza parties or coffee evening/mornings, to address this. There's a start to publishing an annual report on our accomplishments, but it might not be relevant to most students in its entirety. Overall, it is helpful to be a TA while being on the Committee - it feels as though part of the job as a TA is to collect feedback.

What are your favorite aspects of this responsibility?

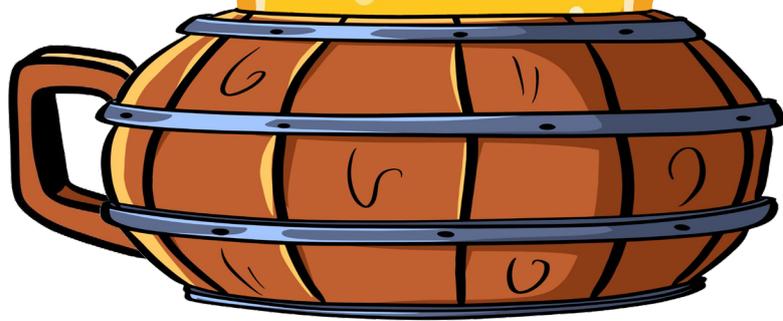
Talking to staff members in a sense where they feel like colleagues - there is much less of a hierarchy within the Committee, so they take your opinions into account if they are justified. It's also been nice to see how the university works behind the scenes as well as learning about the legal power of the committee - technically, we are in charge of the curriculum!



Xenia Demetriou

THE GRADE ON ALCOHOLISM

DO YOU LIKE CODING? WHAT ABOUT DRINKING? THEN THIS ARTICLE IS FOR YOU!



Eduard-Raul Kõntõs

We at DataDump embarked on a journey filled with many perils - including but not limited to experiment design, programming questions, and scariest of all, **statistics** - all needed to test one burning question all students ask themselves: does drinking affect my programming skills?

We'll discuss everything that happened, from how we even came up with the idea of the experiment to the final results of our hard work - a poster (that can be seen on the next page!).

It all began, rather fittingly, with a drink. We thought of many ideas for what experiment to do, with one goal in mind - it should be an interesting idea we can explore while also having fun. In the end, we decided

to combine coding and (moderate) drinking in an attempt to test the old adage that having a couple of drinks improves coding performance - having any more or less decreases it, the so-called Ballmer peak.

To test whether (mild) alcoholism and coding can be intertwined, we decided on several core components: what kind of design we wanted for our experiment, what questions we could ask someone to test their programming prowess, and what factors we wanted to take into account for our analysis. The simplest solution for the experiment was to have two separate groups: one group drank only water (having 12 students), and the other group drank beers (with eight students). Both groups had two designated drinking periods in between coding rounds, where students drank a beer or a glass of water each. The coding rounds (of which there were three) consisted of four programming questions, each that testing the participants' coding skills in C. We also had two coding multiple-choice questionnaires at the beginning and end of the experiment, testing common topics used in programming that did not require any coding. Experiments are not complete without rewards, so we decided to give the students that took part in our little experiment pizza and more drinks - a reward well suited after coding for so much time.

What did we look at specifically? We considered each participant's weight, height, gender, the year they are studying in, and their performance in both the programming rounds and questionnaires. We performed many different statistical tests, made different assumptions about our data, and retrieved our results.

All of this gave us the answer to the most important question ever: drinking alcohol while coding does not have any effect, good or bad. We cannot say that drinking leads to poor nor good performance. The only conclusion of our experiment is that indulging yourself in drinking two beers is completely fine, but drinking less or more (i.e. way more) is unexplored territory as of now. Besides our not-so-significant answer, we created a magnificent poster that can be seen on the next page. We learned many things from our escapade into the world of experiments and hope to conduct more fun experiments in the future on similarly interesting questions that we might have.

THE GRADE ON ALCOHOLISM

"Can I drink while I do my coding assignment?"

In today's fast-paced and technology-driven world, the ability to code effectively has become a highly sought-after skill.

On the other side, alcohol consumption has been an integral part of human societies for centuries, playing diverse roles in cultural and recreational contexts.

It is common for students to engage in alcohol consumption in social contexts, however there is limited research exploring the potential influence of alcohol consumption on coding ability.

This project aimed to address this gap by investigating an important question:

"Should I get tipsy to numb away the pain of coding for assignments?"

Hypothesis

Alright, let's buckle up for this hypothesis and indulge in some beer and science! Building on previous studies, wild assumptions, and tales from our dear alcoholic friends (definitely, for sure, 100% honest none of our personal experiences), we've come up with a theory about how alcohol might mess with your coding skills.

Here's the outline: after chugging down one beer, your coding abilities could actually get a boost! But the second beer is where things might take a nosedive. It's all about that alcohol rollercoaster. Sometimes it works like a wild stimulant, but then it can bring you crashing down like forgetting to add '\n' to your Themis output..

Methods

To test all of this we gathered two groups of 12, respectively 8 willing students to help. They were asked to answer two multiple-choice coding questionnaires, one at the beginning and one at the end of the experiment. Between the two questionnaires, they participated in 3 rounds of coding.

We recorded the number of correctly answered questionnaire questions and how many problems they managed to solve in the allocated timespan of each coding round.

The control group consumed no alcohol throughout the experiment. The second group was asked to chug a beer between the first and second rounds of coding and a second beer between the second and third rounds.

Time to wrap up! Our tests show no significant difference in coding ability after 2 beers!!! Cheers to coding brilliance and tipsiness!

Now, for further research, we could dig deeper into the dose-response relationship (redoing the experiment while dosing the alcohol differently), the long-term effects of alcohol consumption on coding ability and moderating factors. Let's find the magic formula for responsible coding drinking!

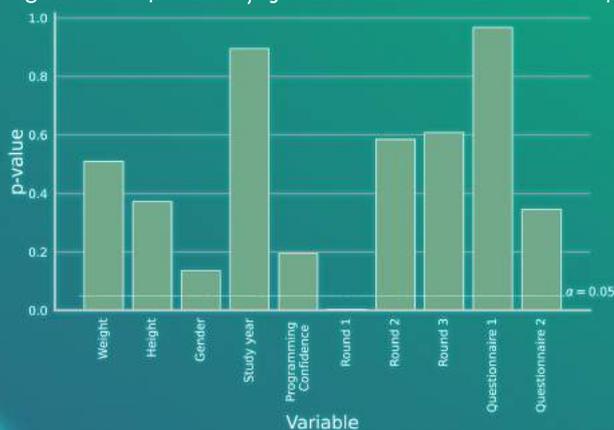


Results

To put our hypothesis to the test, we whipped out this statistical tool called Multivariate analysis of variance (MANOVA) that allows us to juggle multiple coding performance variables all at once.

With our experimental setup VERY carefully crafted and a serious, controlled environment (the Cover room), we had participants diving into coding tasks at different blood alcohol levels (stages of drunkenness). We measured their coding abilities and ran them through MANOVA to get the full scoop on how different amounts of alcohol play with coding skills.

Now, brace yourself, 'cause our jaw-dropping statistical analysis delivered a sentence: there were no significant differences in coding ability across the booze levels we tested. We got the small but not small enough p-value of 0.1104 when considering all variables. In fact, almost all of our variables from the test had non-significant p-values, just look at our beautiful plot!



Drinking two beers while working on assignments is totally cool! *

(but probably not that helpful)



CONVERSATIONS WITH RAFAEL

Join Zeynep and Eduard for the following conversation with Rafael Tappe Maestro (the editor-in-chief of the 2019 edition of DisCover and former member of DataDump) for his thoughts on his contributions to DisCover, emerging AI technologies, and his plans for the future.

ON JOINING DISCOVER AND WRITING ARTICLES

Zeynep

So, how did you come to join the committee? What got your interest, at least?

Rafael

It was the start of the second year - the first year I was probably really overwhelmed just with university itself. When I moved into a shared private thing with Gonçalo as well. I believe we might have gone to the Cover committee fair. Somehow I heard about multiple committees, and I was really excited about a lot of them. So I was like "Oh, I want to sign up for IlluminaTee, I want to sign up for Discover." And what else was there? AC/DC. I was also in AC/DC for some time. And I think that was it. At the time, the FCG didn't exist - probably if the FCG had existed, I would have signed up for it at that time as well.

Eduard

Did you have any articles that you didn't get to write for DisCover?

Rafael

I think I got to write two articles: one fiction piece, and one about clinical trials was put in the magazine. And then also the introductory foreword. It wasn't super easy to finish it, I'll admit, because it was a bit difficult to motivate each other. We had to do a bit more work than we thought because, for example, we were expecting some articles from Martijn and Alper who were also coming to join the Committee, but they never ended up submitting any articles. We still got help from some other people. I think I got to write what I wanted. There is this meme page in the middle of the magazine which was at a slightly controversial time when WhatsApp stickers came out. These stickers were being sent around in the WhatsApp group chats of Cover, so we included some in the piece.

ON CHATGPT AND AI DEVELOPMENTS

Eduard

What do you think of recent AI developments and ChatGPT?

Rafael

In theory, I think it's still six or seven orders of magnitude less efficient than the brain which is pretty bad. We have these large language models that can do a lot of cool stuff, but there's still a lot of room for improvement. I think it's also going to become really interesting to see how it affects people in their more daily lives - now the technology is out, but we don't yet have the apps that come with it.

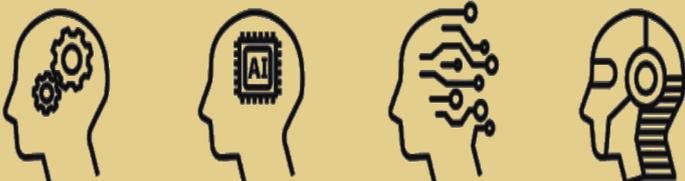
It'll be interesting to see how relationships are going to change: are people just going to have virtual partners or virtual friends that they talk to because they're more interesting to talk to or more reliable? I think that's crazy that it might be a possibility...

Eduard

Yeah. I think that's already happening to an extent because there's an app called Replika.

Zeynep

And what do you think is the biggest challenge in AI?



Rafael

I think navigating how AI is going to become very advanced - for example, we had this case with LaMDA. This Google engineer got himself fired because he was so convinced that the AI was real. He knew it was just a language model which predicts text, not a person with feelings, even though it said it has them.

Maybe this also has to do with Turing tests. Maybe we need a revised Turing test, as we're seeing that it has already been cracked, so we probably need something else.

Eduard

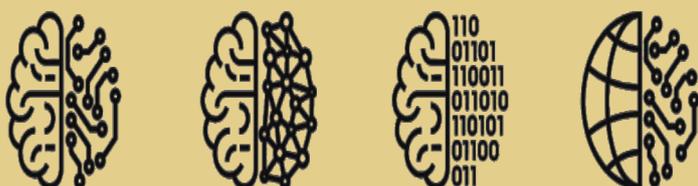
Actually, speaking of that, what's your opinion on image generation algorithms like DALL-E or stable diffusion?

Rafael

I think it's a skill to use these tools. The same goes for ChatGPT, since you can ask your questions trivially and it will give mediocre or flawed answers.

With this, people should be transparent about using these tools. If you go to a museum today and you look at a piece of art, then it says what technique was used and who the author is. I don't think that should change. I think it would be fine to say: "The creator of this image is person that X, using DALL-E with prompt Y, with version Z of the model." I wouldn't mind if that was in a museum, but I would like transparency. I think it's a great opportunity for people to create art for maybe their small website or businesses, who don't have the money to hire an artist.

I also don't think that it's going to harm human art - even when we have mass manufacturing nowadays, people still spend money on handmade goods because their value is different. Of course there are some ethical concerns when it comes to sourcing the training data, but if the company gathered the data with consent, then I would say it's fine.



ON SELF-DISCOVERY AND THE FUTURE

Zeynep

What did you realize about yourself while studying your Bachelor's and here? I would ask, what was your journey?

Eduard

Or rather, what did you discover about yourself?

Rafael

University is nice and it was a nice experience. I was really scared of programming initially, but I learned to be good at it and would now even say I love it. It's just super fun. The first year was really scary. I was looking at the course list and I was thinking: "Which course explicitly requires programming that I have to go through?" So I pushed through and I'm very happy that I did.

Being part of the student community here was also great - I really like the computer science-y and AI people since I just feel comfortable around that peer group. That was also something important, I think - a sort of a place that was home a little bit.

Eduard

What are you going to do next?

Rafael

I would be interested in the medical stuff, and I'm at the point where I think it would be really interesting to do a PhD.

If I go for a PhD, I would want to go for the right project, but it's not really easy for me to say what that would be since my interests have really shifted throughout the years. For my Bachelor's thesis, I did something in multi-agent systems and economics, while for my Master's thesis I did something in neuro-morphic computing and more abstract machine learning stuff. At the moment, I'm actually quite interested in communication in mushroom networks.



Zeynep Defne Metin



Eduard-Raul Köntöş

TOWARDS A

GREENER TOMORROW

How the University of Groningen's Green Office is leading the charge for a sustainable future

Imagine a university where sustainability isn't just a buzzword but a way of life: where the quest for knowledge goes hand-in-hand with a commitment to the planet, where students and staff alike are not just passive consumers but active agents of change. The Green Office is turning these dreams into reality, one sustainable choice at a time.

Welcome to the University of Groningen, tied for third place as the most sustainable university in the world!



Josh Bruegger

Student Assistant for Associations and Events at the Green Office and Chairperson of Cover's Sustainability Committee

The Heartbeat of Sustainability: The Green Office

Picture this: a dynamic, multidisciplinary team of passionate employees and students working tirelessly to weave sustainability into the DNA of the university. That's the Green Office for you—the nerve centre of the University of Groningen's Sustainability Program. Armed with an ambitious [Sustainability Roadmap](#), the Green Office has set its sights on nothing less than transforming the university into a CO₂-neutral institution by 2035. The Sustainability Roadmap isn't just a document; it's a living, breathing blueprint for a greener university. Developed collaboratively by academics, the Green Office, and other stakeholders, the Roadmap revolves around three central themes: Planet, Performance, and People. From groundbreaking interdisciplinary research to diversity and inclusion, the Roadmap is a guide to the university's ambitions.



THE SUSTAINABILITY ROADMAP

Constitutes three central themes

1) PLANET: Aiming for 30% CO₂ reduction in 2026 (relative to 2019) and a carbon-neutral university in 2035

- Biodiversity
- 25% renewable energy
- Circular residual waste
- Sustainable travel & transport
- Sustainability in education
- Interdisciplinary research
- 100% sustainable procurement

2) PERFORMANCE: Increase involvement from students, staff and external parties

- 14% less water use
- Sustainable buildings
- 60-95% plantbased and vegetarian
- Sustainability communication network
- Behaviour & participation

3) PEOPLE: Implementing sustainable HR policy for a dynamic and vital organization

- Motivated, vital & competent employees
- Diversity & inclusion



A Calendar of Change: Events and Initiatives

From fun interactive workshops and sustainability-pong to collaborative research with students through the Living Labs, the Green Office is a hive of activity. Remember the Digital Clean-Up Week? That initiative alone helped us understand that the University's digital footprint (from all of our emails and cloud storage) is not as light as we think—it consumes enough electricity to power 4,500 households annually!

Empowering Associations: The Green Label and Sustainability Subsidy

As the Student Assistant for Associations and Events, I've had the privilege of working closely with student organisations to amplify their sustainability efforts. Through the Sustainability Subsidy and Green Label programmes, we've seen a remarkable uptick in participation. Last year, 41 associations jumped on board to get a label, a significant leap from just seven associations six years ago. Cover got a bronze label, and is working hard to aim for the silver one next year! The ripple effect is real, and it's inspiring more and more associations to align with the university's sustainability goals—all facilitated by the financial support we offer them through Green Subsidies. We've granted a total of over 30,500 euros in the past three years!

The Ambassadors: Grassroots Sustainability

The Green Office is not just engaging with students through associations: the Ambassador Programme is a cornerstone in grassroots sustainability. These volunteers are the eyes, ears, and hands of the Green Office within their faculties. They're not just figureheads; they're catalysts for change, sparking meaningful discussions about sustainability through

interactive activities (like movie nights and debates) and by ensuring our initiatives are as effective and inclusive as possible.

Innovating for the Future

The Green Office is also continually innovating. Take Bernoulli's Bistro for example, the brand-new canteen concept that offers a vast selection of healthy, delicious, and sustainable food options at affordable prices located right in the heart of the FSE side of Zernike Campus. Or the [Sustainable Experience City Map](#), which highlights eco-friendly businesses in Groningen, nudging students and staff toward greener choices. The Green Office is always looking for new ways to engage everyone in our efforts, so don't be afraid to reach out if you have any cool ideas on how to make the University greener!

The Journey Ahead

The University of Groningen's quest for sustainability is a collective endeavour, and the Green Office is its compass. Through various initiatives, partnerships, and future plans, we're ensuring that sustainability isn't just a chapter in the University's story but the very ink with which it's written.

So, are you ready to join us to be part of this transformative journey? Because it's a journey of a thousand miles, and thanks to the Green Office, its workers, its volunteers, and all the students interacting with us, we're taking those crucial steps forward – one sustainable choice at a time.

You can keep up with the Green Office's initiatives through our Instagram [@greenoffice_rug](#), where we share all the cool sustainable events around Groningen. We are also available for any questions, ideas, or remarks at greenoffice@rug.nl.

WOMEN IN STEM

AN INTERVIEW WITH DR. ANDREEA SBURLEA

I am **Andreea Sburlea**, an assistant professor in the Cognitive Modelling group (part of the AI department at the Bernoulli Institute). I am a wearer of many hats - sometimes a professor, and sometimes a student, but I am mainly a neural engineer.



What is it that you do?

I was trained as an electrical and biomedical engineer, but now I am more interested in how AI affects human lives and how it benefits humanity. I research the field of BCIs [Brain Computer Interfaces], and am interested in using brain-inspired algorithms to control robots and systems we have around us.

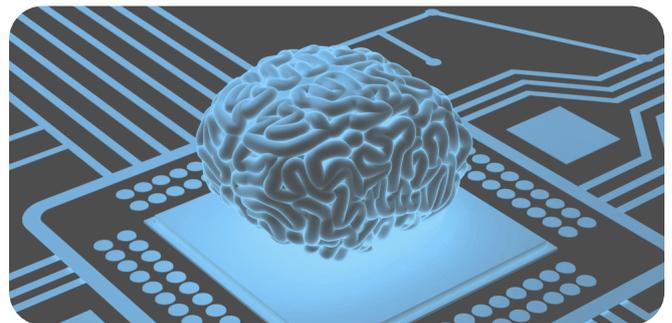
“My goal is to make people feel that what they learnt is worthwhile”

Where did your interest in cognitive modeling start?

I had some conversation with my math professors back in secondary school about what kind of profession I want for the future. I was talented at math and physics and debated whether to pursue this kind of career. My professors advised me not to go into fundamental mathematics if I wanted to have a life, and to go for something more applied. It certainly changed my perspective about how mathematics and physics play a role in both fundamental aspects, and how they are useful in an applied context. I then pursued studies in a technical college in Bucharest, Romania, where I further developed my passion for physics and mathematics. In my university years, I discovered medical applications and how math plays a role in that. Then I moved to the Netherlands to study Human Machine Interaction at the University of Twente where I discovered BCIs - that was the point I realized it was interesting and that I wanted to dive deeper into it.

What project are you most proud of?

Several projects. It's not only the topics that make me proud, but also the experience that I gained through working with a larger team. While I was a post-doc in Graz, Austria, supervising PhD students allowed me to not only go deeper into a project but also work with many talented and gifted people. Doing so expands your vision about the project, and you learn how not to work alone. It becomes more of a mutual learning experience where you gain useful insights on how to listen to each other, and group dynamics.



Tell us about a time where you leadership in a team. What were your strategies?

Now as an assistant professor, I feel more responsibility for leadership as I'm working on my own projects and forming a group around me. You commit to a part of someone's life, and you try to make it feasible that their project will result in a boost in knowledge and empowerment. My goal is to make people feel that what they learnt is worthwhile. I try to make

feasible goals and think about the time management of the person. I also like to tie into the skills and interests of the person. I learned this skill during my post-doc: how to leverage the skills of a person - it is something that is very important. Everyone has interests, but you need to find out in which direction they want to go.

What do you like best about working in STEM?

I like that every day is different, especially since now I'm teaching a lot more than I was previously. Before, my job was 100% research, and now it is more teaching. It is rewarding to work with people, especially with students. It is interesting to see how students go about certain problems. While I tend to have a more solid opinion on certain topics, through conversations with students I realize that perhaps my perspective can change. I am also really passionate about my work - it is very multidisciplinary. I am particularly interested in movement and how the brain perceives movement, and this brings a broad range of opportunities for math, physics, and robotics to emulate these modules. It can be overwhelming at times, but when you like something, it's very exciting due to the infinite possibilities it may bring.

What are some challenges that you faced, and how did you overcome them?

Working with people is not always easy - perhaps it is one of the most difficult things. Sometimes you do have to find common ground and interests to have a fruitful conversation, and to understand your common direction, so this is an important skill to develop. Other challenges are related more with how the academic system works - mostly related to how good science is appreciated in the science community, how effort is rewarded, and how pushing the barriers of science is not rewarded: only the outcome is rewarded. Sometimes, if you only target the outcome, you miss a lot of things on the way. Don't only think about the destination, but also the way there.

The system is not always objective, and certainly not always caring enough about the efforts that one puts into their work. It's biased towards positive outcome. There is a lot of value in negative results, and a lot of useful insights that can be derived from them. When

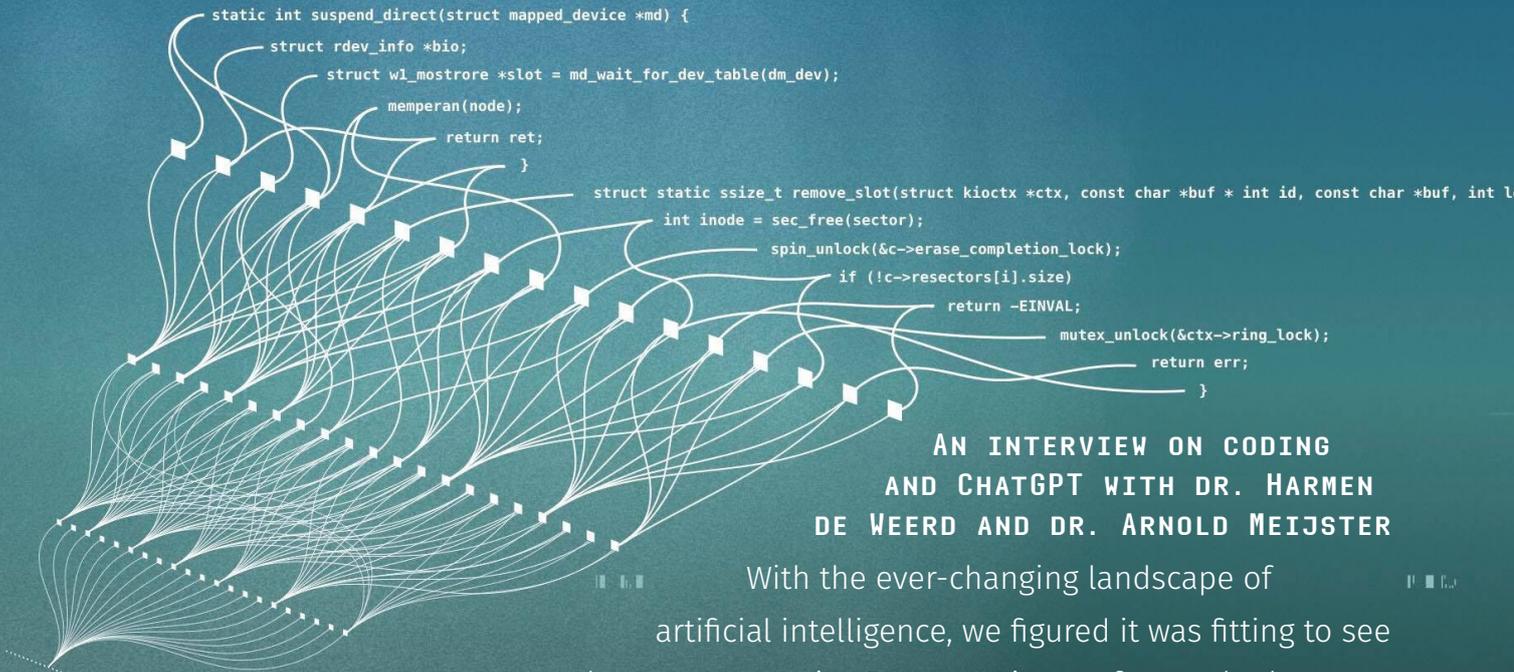
“Don't only think about the destination, but also the way there.”

we have negative results, we as a science community should care about them because a lot of resources go into repeating things that are shown to yield negative results. This allows us to be more mindful as to how we allocate time and resources in future research.

Xenia Demetriou



WRITE ME SOME CODE.



AN INTERVIEW ON CODING AND CHATGPT WITH DR. HARMEN DE WEERD AND DR. ARNOLD MEIJSTER

With the ever-changing landscape of artificial intelligence, we figured it was fitting to see what two Imperative Programming professors had to say about OpenAI and its developments.

PLAYER 1:
DR. HARMEN
DE WEERD

How long have you been teaching Imperative Programming for?

I have been teaching it for two years now, and I will change the course almost entirely for this year - it will be taught in Python. This makes it easier for people to get into programming, but taking electives from Computing Science will be more challenging. There are a lot of arguments like “C is more pure than Python”. In that sense, you can also argue that Assembly is more pure than C. You can even take it a step further by going into the hardware and build the computer program yourself, but there is a line you have to draw. In the end, it is about learning the basic concepts behind programming, not just the language used to program.

We teach students to be tool-independent such that their programming skill remains the same with C or Python.

For students who get into the program for the very first time, it's a lot to learn and get accustomed to in the beginning. If you lose pace, it's not possible to catch up anymore which is not ideal. Students that are just coming in - who most likely were in the top 10% of their class - will have to compete with the other 10% of students from different parts of the world. This will mean that 90% will no longer be in the 10% at university, and that takes a while to get adjusted to.

What should a student be prepared for when beginning to program for the first time?

They don't really need any information about how to program beforehand, but it is very good if they have a certain mindset - some sort of computational thinking, imagining a problem as a collection of smaller problems to solve individually to then build a grand solution. It's better to start off with the difficult part of a problem and then program the smaller details around it.

What's your favourite hobby outside of university?

I did Zumba for a while and really enjoyed it. I like to cycle and walk around and outside the city. I also have a collection of games I didn't play. Nowadays with Epic giving out a bunch of games every week, I have an Epic library with games I never played. I play videogames on the weekend, I have a son who also likes playing video games and we like to play cooperative games together. Our favourite game to play at the moment is probably Pokemon Go and Tunché.

What do you think about Internet websites like Reddit, StackOverflow or other forums?

I think it's fine to use it to learn how to code. There is a difference between learning how to code and completing an assignment. So to learn some new things, why not ask other people or discuss with other people online or offline? There are some very bright people on StackOverflow so why not take advantage of their knowledge?

Do keep in mind that to ask people how to solve an assignment is hampering your learning experience. Asking about general programming questions is more than fine.

Could AI tools become a mandatory part of every programmer's repertoire?

I don't think it is a skill programmers should have necessarily, but the AI will only continue to get better I'm guessing. Seeing students doing their projects asking ChatGPT for help with a tab open, I would advise against it.

What is your opinion on ChatGPT?

I think ChatGPT is very impressive. It can do a lot, it's surprisingly coherent with follow up questions and can keep a topic very well.

Does it provide good information regarding programming?

I think it can be very good with typical regular programming, so things that are done a lot when learning how to code. For instance, if you ask it to output a program to print all the primes I'm sure it would do that well. If you want something more uncommon, more "spicy", then tough luck.

Can ChatGPT be used when learning to code?

There is a clear difference between learning how to program and doing an assignment. You can use it to learn and even ask why it made certain choices, such as why the loop for determining primes stops at the square root of n instead of $n/2$.

Should AI tools be integrated into programming education?

They should be kept in programming education with the emphasis on using these tools to learn programming instead of completing assignments. Plagiarism is the main concern of course – the only solution to combat that is to not grade assignments anymore due to the uncertainty of it being completed using ChatGPT, which is of course not viable.

Introducing ChatGPT

We've trained a model called ChatGPT which interacts in a conversational way. The dialogue format makes it possible for ChatGPT to answer followup questions, admit its mistakes, challenge incorrect premises, and reject inappropriate requests.

[Try ChatGPT](#) [Read about ChatGPT Plus](#)



How long have you been teaching Imperative Programming for?

15 years or so, I don't know exactly. I inherited the course from the time it was taught in Java and did that for one year - after that I decided to use C. In my view, Pascal is the perfect language for teaching programming, which we did in the past. But people thought we needed to modernize and we ended up using several languages, like Modula (2/3), and Java. In the end my conclusion is that Java is not suitable as your initial programming language. From day one, you need to use classes and OO, which distracts from understanding the basis of procedural programming and algorithms. Pascal was considered too old fashioned, so I chose C instead (which is older than Pascal actually).

We are the only university in the Netherlands as far as I know that start teaching programming in C. Many programs start using Python. If you study physics that is fine, but if you are a computing scientist you should know more than Python. Python is a sort of super-glue - you can glue together things that have already been made by others. If you start with Python, you will have a hard time understanding things later on (like efficiency and memory management).

What should a student be prepared for when beginning to program for the first time?

They need to be prepared for a lot of practice. Programming is not about remembering things; it's about building things. They need a certain interest in breaking up a problem into smaller parts and working on them one by one, so they need a sort of abstract level of thinking. Writing the solution in whatever programming language takes the least amount of work. Some students call my course too mathematical, but it is just arithmetic and logic. That is what I expect: basic logical reasoning!

What is your favourite hobby outside of university?

I like to program at home and work on stuff like that [he points to a robot solver for the Rubik's cube made with Lego]. I play an enormous amount of Blitz chess, easily 10 to 20 games in a day. I am member of a chess club, a golf club, and a fly-fishing club.

I like to cook a lot, especially in my garden, where I like to smoke fish on my BBQ.

What do you think about Internet websites like Reddit, StackOverflow or other forums?

A colleague of mine once said that deep learning is just an excuse for shallow thinking. I have the same feeling here. We cannot forbid students to use them but it results in poor programmers.

As I see it, we have three types of students: really good ones that find it fun and do stuff right easily. Next, we have students which are struggling but willing to do the work and in the end they will "win". The third category is the group of students that immediately use Stack overflow and literally search there for solutions of my exercise and only make modifications to the result.

This third group usually fails in the end. The trick is actually Themis: if you pass the test cases in Themis, you basically pass a lab. These students usually score an 8 or 9 on the labs and 2's and 3's in the exams. It cannot be true that they score excellent during the week and fail completely on the exam. A 5 or 6 might be possible if you have a bad day during the exam, but scoring a 2 or 3 is really not possible. These students are just fooling themselves.



```
31 def __init__(self):
32     self.file = None
33     self.fingerprints = set()
34     self.logdupes = True
35     self.debug = debug
36     self.logger = logging.getLogger(__name__)
37     if path:
38         self.file = open(os.path.join(path, "fingerprint.log"), "a")
39         self.file.seek(0)
40         self.fingerprints.update(self.fingerprints)
41
42 @classmethod
43 def from_settings(cls, settings):
44     debug = settings.getbool("debug")
45     return cls(job_dir(settings), debug)
46
47 def request_seen(self, request):
48     fp = self.request_fingerprint(request)
49     if fp in self.fingerprints:
50         return True
51     self.fingerprints.add(fp)
52     if self.file:
53         self.file.write(fp + os.linesep)
54
55 def request_fingerprint(self, request):
56     return request_fingerprint(request)
```

What is your opinion about ChatGPT?

I find it very impressive for the things it does. In fact, I used it myself this morning to translate something in English - better than I can do myself - so in that sense it is pretty useful. But I consider it only useful in the hands of people that know what they are doing. The problem in our context, the exact sciences, is that ChatGPT is a language model. It does not compute. For example, I asked it to compute the inverse of a number in a modular group while I knew the number doesn't exist. Still, ChatGPT comes up with that non-existent number and even explains confidently step-by-step how it got that result.

Does it provide good information regarding programming?

Well, the thing gives wrong answers super convincingly - for that, I am super afraid of the system. I would be very hesitant to use it in my research. For example, when I asked the system about some of my research, it correctly referred to papers written by me, but it also

came up with at least ten references that I could have written, but I actually never did. It even includes the names of legitimate journals, years of publication, etc. I even tried to look up some of those papers, to see if some of my colleagues has added me as an author without me knowing but that would be very strange. The fact is, these references simply do not exist. If you ask ChatGPT to produce programming code, then I am even more worried because it misses the context in which the code will be used.

Can ChatGPT be used when learning to code?

With Imperative Programming, I tried to solve some exercises to test that. To my surprise and annoyance, 28 out of 32 were being solved correctly. The problem is that most exercises are pretty simple and small and you can find them (or variations) on the internet. So, they just appear in the database of ChatGPT. I can try to come up with new exercises that are not correctly solved by ChatGPT, but these exercises tend to become too hard which is not what you want. The goal of the course is learning how to program, not for a machine to do it for you.

Could AI tools become a mandatory part of every programmer's repertoire?

No. But it will happen anyway. Again, the thing exists so people are going to use it. I'm pretty sure the students are better at using it than we are as staff.

No, we will not teach you how to use it but people are going to learn how to use it anyway.

Should AI tools be integrated into programming education?

Well, I want to turn it around: programming should be more introduced in AI programs. We are now coming to a point where ChatGPT can write for you the components of a large system or game, but we still have to glue it together and design larger programs. If we let ChatGPT do this design (I doubt that is possible), we get massive programs for something which could have been a much smaller project. You should be in control. You know what you're doing, while ChatGPT does not. So, you may use ChatGPT to do some computation for you, but you still need to know what it computes and how. Just asking it "Give me the right answer" is not going to work.



Alexandra Thudor



Eduard-Raul Kóntőş

Taking on the European Rover Challenge

The **European Rover Challenge (ERC)** is a competition where teams simulate scenarios that can happen on Mars (or the Moon) under the incentive to transport materials, or even people one day. A lot of autonomy is required for this to happen, hence why robotics is used during the competition to carry out tasks on simulated terrain.

The competition is divided into an **on-site event** (where teams build an autonomous rover from scratch), and a **remote event** (where the rover is already provided, and teams have to code its operation). ERC is sponsored and developed by the European Space Agency (ESA) and the National Aeronautics and Space Administration (NASA), with the European edition of the competition centralized in Kielce, Poland.

The University of Groningen's own makerspace committee, MakerCie, have set their sights on becoming the first Dutch team to take part in the competition! Join us for the following interview with MakerCie member **Justin Lungu** for his thoughts on the journey to ERC 2023.

When is the competition?

The competition starts in April and lasts until January. There are different phases in which teams qualify, like a tournament, with each phase lasting approximately 1 month.

How is it to build a rover from the ground up?

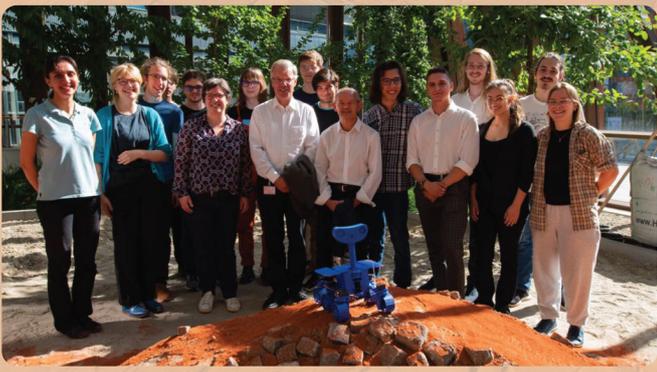
The hardware team is working on building the rover for the remote competition, with 3D models and 3D printing. For the onsite competition taking place next year, they are spending time on preparations and designs for the rover. It is hard to currently test out implementations without the equipment yet, but progress is still being made.

Building the hardware for the competition also requires extensive research into similar projects that have already been implemented, including NASA

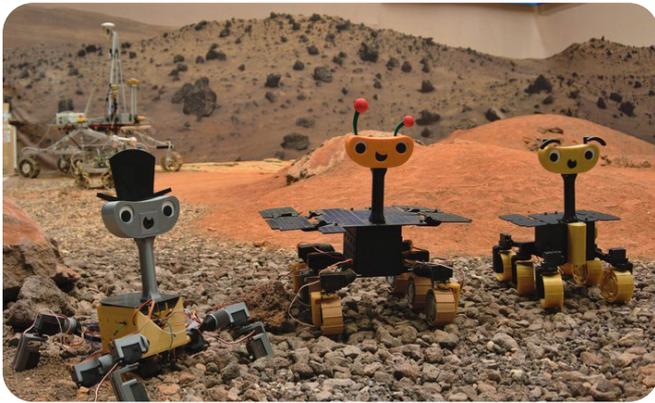
Who is involved with MakerCie's rover team?

The team is currently expanding, but right now there are a total of 27 people involved. There are four main subheads: **Błażej Rozmarynowicz**, **Călin Mihai Ghizdaveț**, **myself [Justin Lungu]**, and **Helena Jaworska**.

We have support from the study associations FMF and Cover, but we still actively search for new team members and financial support. We have also received guidance from **Ben Wolf** and **Hamidreza Kasaei**, and we are being coordinated by our supervisor, **Bahar Haghghat**. She has guided and helped us a lot so far through this journey, and we would not have gotten this far without her.



documentation for certain designs. It was quite a challenge to research the drill mechanism for the robotic arm, since there is also a lot of confidential information which is hard to obtain and research from. However, the competition also helps out where they can and advice from past team leads is quite valuable. The robot is named **ExoMy** - developed by the ESA. It is entirely 3D-printable and runs on ROS [Robot Operating System].



ERC Task 1: Navigation task

In this task, the rover travels around a 10x10 meter terrain. A user will remotely control the robot with a joystick, viewing the scene from an integrated camera on the rover. The terrain will be marked with ten landmarks with ARUCO codes - seven of them have to be traversed through, three of them are dangerous (hence should be avoided), and the rover needs to drop a probe on the ground on one of the non-dangerous landmarks.

Although teleoperated, computer vision can be implemented to the rover to aid the human teleoperator recognize landmarks. Marking targeted and dangerous landmarks in colored borders speeds up the identification process for which the human would need to adapt the navigation to. Points are allocated to us for each landmark we pass through - there are 30 minutes given to us to perform the task but doing it faster will result in bonus points. Points are also given to us based on the quality of the report in which we communicate the documentation of how we implemented the task.

ERC Task 2: Maintenance

For this task, we use an autonomous UR3 robotic arm with six degrees of freedom. We chose to make it autonomous since it is not easy to teleoperate an arm

with that many degrees of freedom through a camera. The arm would be placed on a table with some panels in front of it. The arm needs to be able to press buttons on the panel in specific sequences as well as take an IMU unit and place it in a certain given position.

The button sequences are comparable to a real life maintenance malfunction operation. In a real life manned space expedition, robotic arms should be able to carry out maintenance tasks on devices with minimal human intervention by pressing buttons in a certain order. In other words, humans would provide the sequence of buttons to press, while the robotic arm follows that order to reproduce the sequence.

ERC Task 3: Presentation

Besides the robotics, there is also a 20 minute presentation (explaining the entire project, our team, and organization) along with a 3-minute YouTube video depicting everything in the team workflow as well as any challenges and how they were solved.

How was the rover team founded?

In their first year, Călin and Błażej were looking to get involved in extracurricular activities but there did not seem to be much for Bachelor's students to join, and not many robotics competitions at an undergraduate level. Upon looking at the FMF association website, they saw the abandoned committee MakerCie, which used to hold makerspace events. With this opportunity, they co-founded the revival of MakerCie with plans to participate in a robotics competition through that platform. One afternoon, while sitting on the beanbags in the Energy Academy, they were searching for competitions to participate in, found ERC, and decided to reform Makercie as a rover team to participate.

They met with Thomas Westerhuis, the student assessor of FSE before contacting Marc van der Maarel to pitch their project as the first Dutch team to ever participate in ERC. This seemed to align nicely with the faculty's longer term plan of becoming a more technical-oriented university, where the newly reformed MakerCie would allow students to learn robotics in a practical way. Marc was quite involved in driving the team forward and setting them up with the appropriate connections, such as the director of ENTEG among others.

A significant turning point in the team was when they connected with Bahar Haghghat, who agreed to be their supervisor for this project and continues to now provide a lot of support to the team. After that, they started expanding their recruitment to the Artificial Intelligence department whereby the team grew larger. The recruitment of Justin was quite a breakthrough moment for MakerCie, forming the software and hardware sub-teams within the committee by his advice. Further sub-teams were created to tackle the three specific ERC-tasks (navigation, maintenance and presentation).

Currently, the MakerCie rover committee have considerable funding and support from the University and study associations.

Future plans for the team

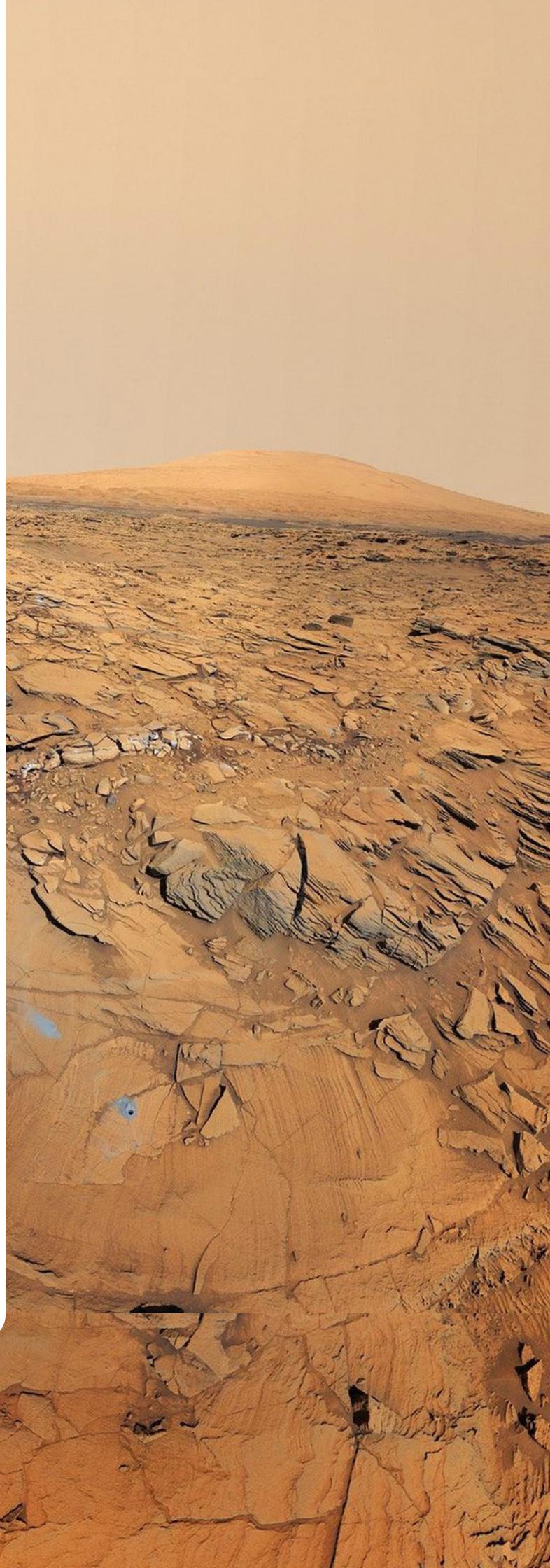
Following their current goal to participate in the remote ERC in September 2023, the rover team will attend the on-site ERC in June 2024 and look to one day qualify for the University Rover Challenge (URC) held in Utah, USA. They hope that this stays as an ongoing educational organization even after the current team graduates, open to students of all skill levels to gain hands-on experience learning robotics to solve practical problems.

The university does not have much of the niche in robotics with regards to space exploration, so the rover team aims to address this gap. It is especially beneficial for students intending to align their career in this direction, as connections with NASA and ESA are made at the on-site competitions.

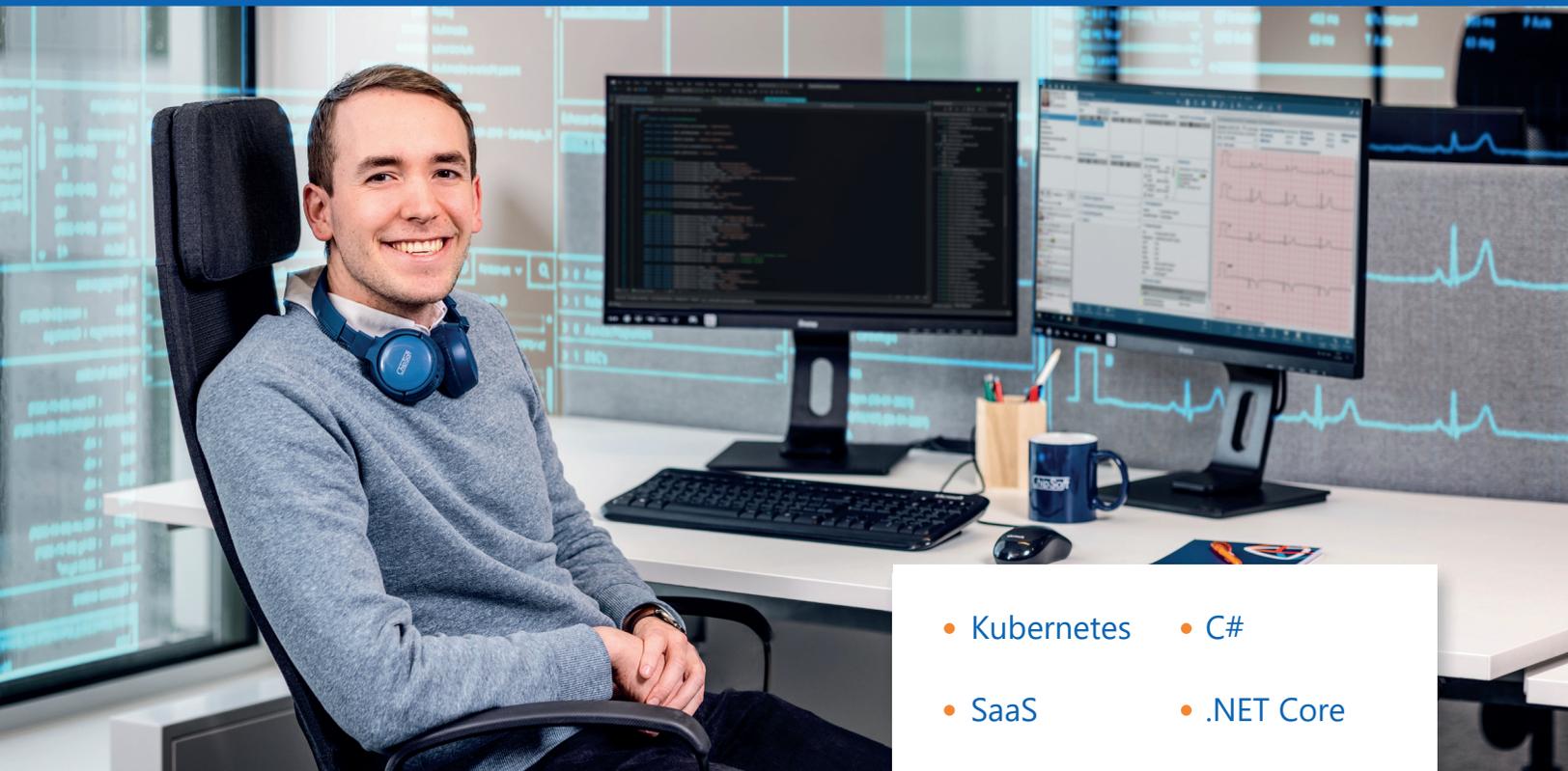
Looking forward, the team hopes to incentivise future student involvement by setting up an ECTS credit scheme to reward participation, while exploring the possibility to fund and receive robotic parts from other continents. This would greatly improve both rover quality and performance, bringing MakerCie's robotics competitors one step closer to ERC glory and beyond!



Xenia Demetriou



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THE QUANTUM FUSS

QUANTUM COMPUTING IS THE HOT TOPIC DU JOUR IN THE TECHNOLOGICAL REALM, OFTEN CAST AS AN AMALGAM OF FUTURISM, CONJECTURE, AND FINANCIAL SPECULATION.

FOR THE CASUAL OBSERVER AND EXPERIMENTAL PHYSICIST ALIKE, IT'S SEEN AS A GAME-CHANGER, THE KEY TO THE NEXT TECHNOLOGICAL EPOCH. YET MANY SEASONED COMPUTER ARCHITECTS REGARD IT WITH SKEPTICISM, DISMISSING IT AS MERE HYPE. MEANWHILE, SAVVY INVESTORS ARE EYEING THIS BURGEONING FIELD, ANTICIPATING A PROFITABLE VENTURE.



Alex Procelewski

My mission in this article is to guide you through the labyrinth of quantum computing, unraveling its complexities, and presenting a clear-eyed view of this pioneering technology. After reading this, I hope you'll be equipped to form your own informed stance on this fascinating yet contentious subject.

We'll begin by grounding ourselves in the essential physics underpinning quantum computing, moving towards analyzing the most recent breakthroughs in the field. In our journey, we'll scrutinize the controversial claim from Google suggesting they've achieved quantum supremacy by solving a complex problem within minutes—a task that would take a supercomputer approximately 10,000 years to complete. We'll round off with an engaging practical demonstration, implementing a small quantum algorithm on the AWS Braket platform. So, let us embark on this intellectual voyage into the quantum realm!

DECIPHERING QUANTUM COMPUTING

AWS provides a succinct definition of quantum computing: "Quantum computing is a multidisciplinary field combining aspects of computer science, physics, and mathematics that employs quantum mechanics to solve complex problems more swiftly than classical computers. It encompasses both hardware research and application development." For the purpose of this article, I'll break it to its bare essentials — qubits, their states, and forms.

1. BITS VS. QUBITS: SAME OR DIFFERENT?

A conventional bit is a binary system that denotes electronic signals—power on (1) and power off (0). But the quantum realm permits us to venture into the gray area — quite literally, the "middle" between power on and power off. Sounds paradoxical, doesn't it? How can something both possess and lack power simultaneously? Allow me to elucidate through the introduction of several core quantum concepts:

SUPERPOSITION is the phenomenon whereby a quantum state can be expressed as a sum of two or more distinct states. In simpler terms, multiple qubits can be combined, and they'll always constitute a valid quantum state. In the quantum world, we envision states as a wave oscillating between 0 and 1. But why is this important? This principle enables quantum parallelism, facilitating the simultaneous execution of millions of operations by qubits.

ENTANGLEMENT arises when two systems become so intimately interconnected that knowledge about one system immediately imparts information about the other — regardless of their spatial proximity. Quantum processors exploit this phenomenon by measuring one system and, subsequently, deducing the state of the other systems.

You may be wondering, "If we measure a qubit, can we obtain a value like 0.4?" The answer is no. Upon measurement, the wavefunction collapses and the qubit adopts a definitive state—either 0 or 1.

DECOHERENCE is the process by which a qubit loses its quantum state due to interference such as radiation or temperature fluctuations. One of the most significant challenges in quantum computer engineering is developing effective strategies to mitigate decoherence, thereby maximizing the computational utility of qubits.

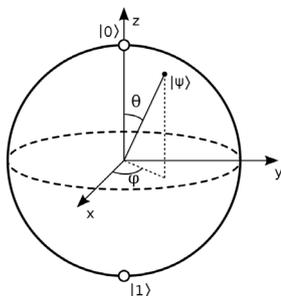
2. DECODING QUBITS

There's a variety of qubit implementations, with different research groups proposing unique engineering solutions. For instance, TU Delft employs gate-based superconducting processors, while Qilimanjaro Quantum Tech focuses on quantum annealers. However, all these approaches revolve around the fundamental unit of quantum computing—the qubit. The two foundational states of a qubit are denoted as $|0\rangle$ and $|1\rangle$. But as discussed earlier, a qubit's state can exist somewhere in between these extremes, represented by the following:

$$\psi = \alpha |0\rangle + \beta |1\rangle$$

where, α and β signify the complex probability amplitudes for each state.

The selection of base states is arbitrary, the only stipulation being that the sum of probabilities for all possible states equals 1. Moreover, a qubit's state remains unaffected by scaling with a vector, which means that probability amplitudes can always be scaled by an arbitrary real factor without altering any observable properties of the system — a concept known as scaling by a global phase factor. This condition restricts the system to a state definable by two real parameters.



A qubit's state is best visualized using a Bloch sphere as seen in the figure above — a three-dimensional representation that uses a polar angle θ and an azimuthal angle ϕ . However, the intricacies of Bloch spheres exceed the scope of this article.

QUANTUM SUPREMACY: A MATTER OF PERSPECTIVE

On October 23, 2019, a groundbreaking article titled “Quantum supremacy using a programmable superconducting processor” hit the scientific community. The Google research team claimed the significant achievement of quantum supremacy by performing a task that would purportedly take a supercomputer 10,000 years. An awe-inspiring claim indeed. But the devil, as they say, is in the details.

While Google's Sycamore quantum processor performed spectacularly on the assigned task, mainstream news often overlooked the nature of this task: simulating a quantum computer. Does this mean that Google's processor outperformed classical computers on typical algorithmic tasks? Not necessarily. The experiment was specifically designed to illustrate the supremacy of a quantum computer in simulating quantum phenomena—a niche, albeit critical, application.

Google's assumption hinged on the belief that simulating 54 qubits for 25 cycles would take a classical supercomputer about 10,000 years. However, this presumption was challenged in late 2022 when a team from the Chinese Academy of Sciences simulated a quantum computer with 53 qubits performing 20 cycles in less than 15 hours.

Was Google playing fast and loose with the facts? Not quite. To understand this, we need to unpack what they meant by “We have achieved quantum supremacy.” The phrase suggests the identification of a task — no matter how arcane — that a quantum computer can tackle more efficiently than its classical counterpart. In response to the recent strides in classical computing, Google candidly acknowledges: “In our 2019 paper, we said that classical algorithms would improve [...] but the key point is that quantum technology improves exponentially faster. So we don't think this classical approach can keep up with quantum circuits in 2022 and beyond, despite significant improvements in the last few years.”

HANDS ON WITH AWS BRAKET!

Let's transition from theory to practice by examining Amazon Braket and implementing a simple quantum circuit. We will explore the concepts of Braket, quantum circuits, and two fundamental gates: the Hadamard gate (H) and the controlled-NOT (CNOT) gate.

1. AMAZON BRAKET

Amazon Braket is a fully-managed service that provides tools and resources for exploring and implementing quantum computing. It enables researchers and developers to design, build, and run quantum circuits on different quantum processors. Braket supports various quantum development frameworks, making it accessible and versatile for quantum computing projects. Most notably, in the AWS Free Tier everyone has 1 hour of free quantum simulations per month.

2. QUANTUM CIRCUITS

Quantum circuits are sequences of quantum gates and operations that manipulate the state of qubits. They leverage quantum phenomena, such as superposition and entanglement, to perform computations on quantum systems. Quantum circuits are created using programming languages and frameworks designed for quantum computing, such as Qiskit or Amazon Braket.

3. QUANTUM GATES

In quantum computing, the Hadamard gate (H) and the controlled-NOT (CNOT) gate are two commonly used gates that play crucial roles in quantum circuits.

3.1. HADAMARD GATE

The **Hadamard gate (H)** is a single-qubit gate that creates superposition. It transforms the basis states as follows:

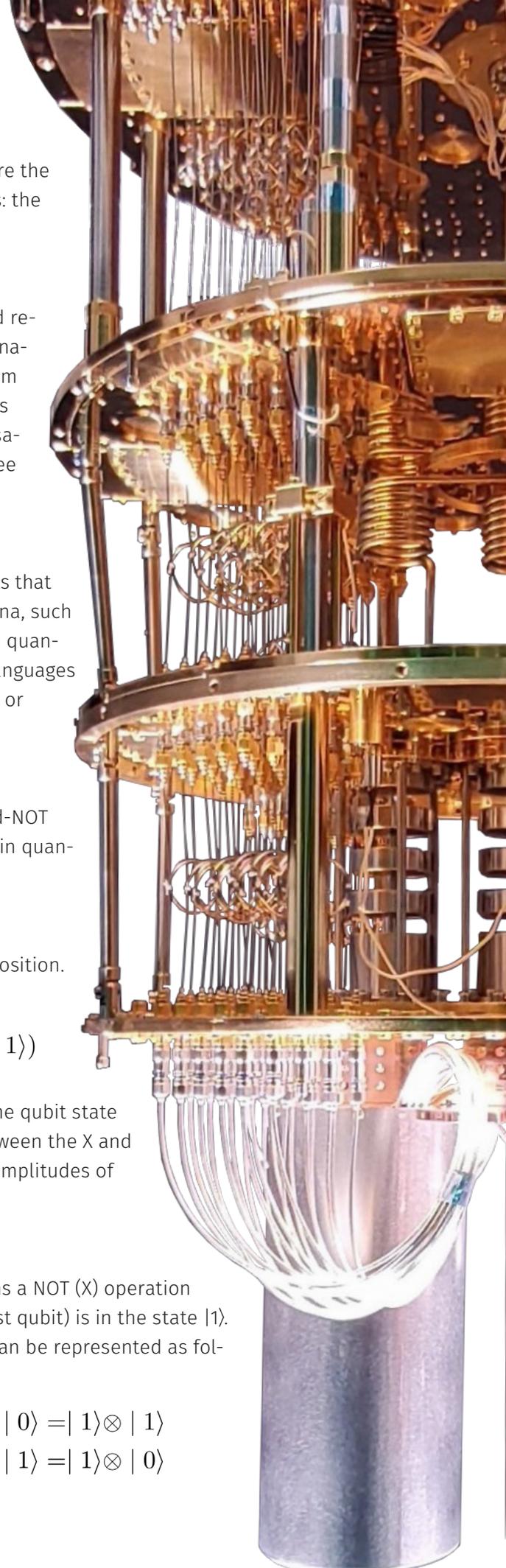
$$H | 0 \rangle = \frac{1}{\sqrt{2}}(| 0 \rangle + | 1 \rangle) \quad H | 1 \rangle = \frac{1}{\sqrt{2}}(| 0 \rangle - | 1 \rangle)$$

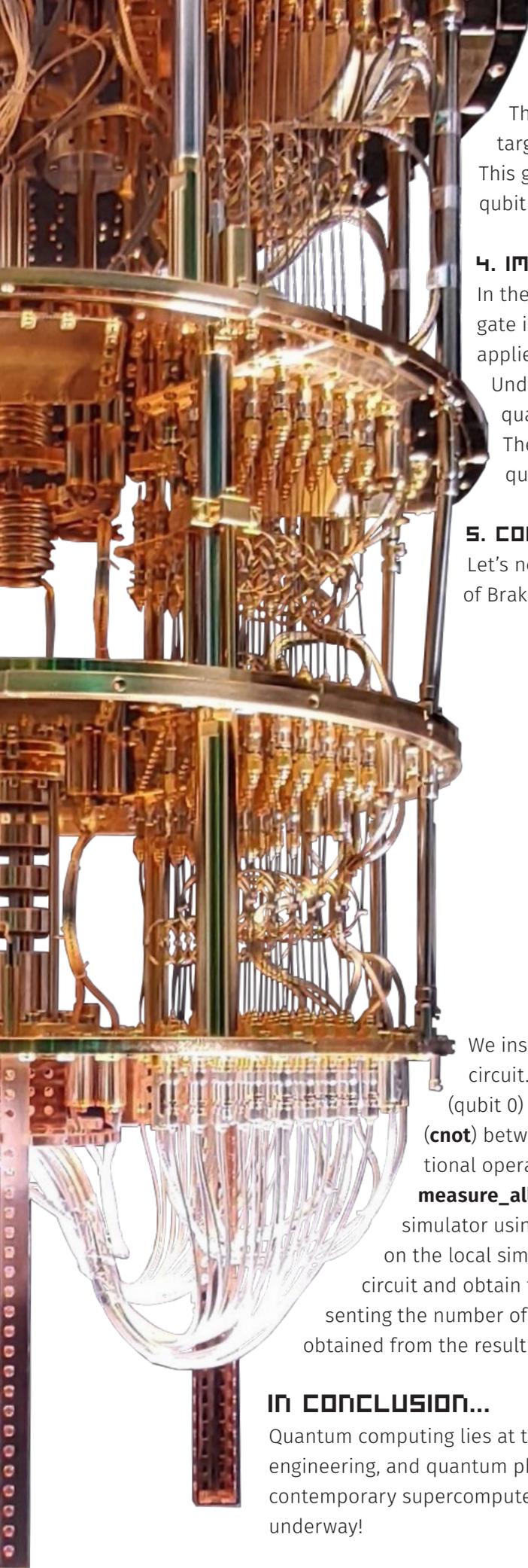
Geometrically, the Hadamard gate corresponds to a rotation of the qubit state vector by 180 degrees around the axis that lies in the middle between the X and Z axes on the Bloch sphere. It evenly distributes the probability amplitudes of the basis states, creating a uniform superposition.

3.2. CONTROLLED-NOT GATE

The **controlled-NOT gate (CNOT)** is a two-qubit gate that performs a NOT (X) operation on the target qubit (the second qubit) if the control qubit (the first qubit) is in the state $| 1 \rangle$. Otherwise, it leaves the target qubit unchanged. The CNOT gate can be represented as follows:

$$\begin{aligned} CNOT | 0 \rangle \otimes | 0 \rangle &= | 0 \rangle \otimes | 0 \rangle & CNOT | 1 \rangle \otimes | 0 \rangle &= | 1 \rangle \otimes | 1 \rangle \\ CNOT | 0 \rangle \otimes | 1 \rangle &= | 0 \rangle \otimes | 1 \rangle & CNOT | 1 \rangle \otimes | 1 \rangle &= | 1 \rangle \otimes | 0 \rangle \end{aligned}$$





The controlled-NOT gate acts as a conditional gate, where the target qubit's state is flipped if and only if the control qubit is $|1\rangle$. This gate is particularly useful for creating entanglement between qubits and performing controlled operations.

4. IMPLEMENTATION

In the provided code example using Amazon Braket, the Hadamard gate is applied to qubit 0 using 'h(0)', and the controlled-NOT gate is applied between qubit 0 (control) and qubit 1 (target) using 'cnot(0, 1)'. Understanding and utilizing these gates are essential for designing quantum circuits and implementing various quantum algorithms. They form the building blocks for constructing more complex quantum operations and computations.

5. CODE EXAMPLE

Let's now dive into a practical code example demonstrating the use of Braket, quantum circuits, and the Hadamard and controlled-NOT:

```
from braket.circuits import Circuit
from braket.devices import LocalSimulator

# Create a quantum circuit with 2 qubits
qc = Circuit().h(0).cnot(0, 1).measure_all()

# Define the backend as the local simulator
backend = LocalSimulator()

# Run the circuit on the local simulator
task = backend.run(qc, shots=1000)
result = task.result()

# Get the measurement counts
counts = result.measurement_counts

# Print the measurement results
print(counts)
```

We instantiated a Circuit object and apply quantum gates to the circuit. We start by applying the Hadamard gate (**h**) to the first qubit (qubit 0) to create superposition. Next, we apply a controlled-NOT gate (**cnot**) between qubit 0 (control) and qubit 1 (target) to perform a conditional operation. Finally, we measure all the qubits in the circuit using **measure_all()**. To simulate the circuit, we define the backend as the local simulator using the **LocalSimulator** provided by Braket. We run the circuit on the local simulator by calling **backend.run(qc, shots=1000)** to execute the circuit and obtain the measurement results. The measurement counts (representing the number of times each possible measurement outcome occurred) are then obtained from the result using **result.measurement_counts**.

IN CONCLUSION...

Quantum computing lies at the interdisciplinary forefront of computer science, electrical engineering, and quantum physics. With the promise of computing power unrivaled by contemporary supercomputers, humanity's race towards quantum supremacy is already underway!

THE BEGINNING OF AN END

INSIGHTS FROM FRESHMEN AND SENIORS

Starting and finishing a Bachelor's certification is challenging at any university – the Computing Science and Artificial Intelligence degrees at the University of Groningen are no different. We spoke to several students at the beginning and end of their journeys in the Bachelor's about the challenges, triumphs, and lessons learned throughout their time in Groningen.

MAX – 1ST YEAR CS BACHELOR STUDENT

Likes playing padel, boxing and socializing with friends, going to the park, and clubbing at Sunny Beach, Wolter Wholters or RGB. Before becoming a student, he worked at a data science company.

WHAT WERE YOUR EXPECTATIONS BEFORE STARTING UNIVERSITY? WERE THOSE EXPECTATIONS MET?

In high school I was able to get away with doing little work while getting pretty good grades, so it came as a shock that I had to work every day to achieve the same thing. It was a really big reality check going from being the smart person in high school to being average in university. The workload was a huge jump, but I've learned to manage it and it is now enjoyable. I started prioritizing work and then I had to find a more healthy middle ground with socializing and sleep. I play sports twice a week, go out twice a week and I'm on top of my work.

How did you choose your study program? Did you make the right choice?

I've known since 10 that I enjoyed math and problem solving and CS seems like a natural middle ground. In terms of choosing a university, I started with a Google search for "Best computing science universities in the Netherlands". I also got into Bristol, so coming to the RUG was a price thing in the end. For quite a bit of the first months when I was still settling in, I did question

my choice quite a bit since a lot of my high school friends went to the same university. But once I found my friend group here and found a work-social balance, I didn't doubt the fact that I made the right choice. I went from home-schooling to full-time boarding school at 13, so that was more drastic than this - I was accustomed to not living at home.

HOW WAS THE TRANSITION FROM HIGH SCHOOL TO UNIVERSITY? WHAT WERE THE MAIN DIFFERENCES?

I feel like board school and university are quite similar in terms of changes. It is pretty similar to student accommodation and spending a lot of time with friends there.

WHAT CHALLENGES DID YOU FACE IN YOUR FIRST YEAR? HOW DID YOU OVERCOME THEM?

For anyone coming to study CS or AI, be aware of the Imperative Programming course. The difficulty of the exercises was like nothing I have seen before. As a subject, it was so different from high school in which I knew if I studied a bit I could understand anything.

You go into stages in which you really doubt yourself - "Am I smart enough for this?"

You just have to keep working hard and eventually it all clicks into place. It is so satisfying seeing all green checks on Themis, there is nothing better than that - it is like a drug.



HOW DO YOU MANAGE YOUR TIME?

I manage my time quite strictly, I know every morning I am awake at 8:30, or a bit earlier if I have a lecture at 9:00. I plan my day quite rigidly. In my calendar I have everything set up to also avoid double booking. I also make sure to allocate time for exercising and socializing to not work all the time during the day, which is not healthy at all.

WHAT'S YOUR BIGGEST PIECE OF ADVICE FOR OTHER STUDENTS?

Work hard, but enjoy the ride.

RAVI – 1ST YEAR AI BACHELOR STUDENT

Likes to maintain a routine as much as possible. Enjoys writing fantasy novels, watching YouTube, listening to podcasts, and cooking.

WHAT WERE YOUR EXPECTATIONS BEFORE STARTING UNIVERSITY? WERE THOSE EXPECTATIONS MET?

I did not have many expectations to begin with. I just expected to go to school and hang out in dorms. After coming here, school feels a bit more of an independent responsibility. I go to class and study for my own future.

How did you choose your study program? Did you make the right choice?

I was first considering studying Computing Science,

but did not meet the prerequisites due to my IB Diploma. I also applied to some German universities, but did not qualify due to the language test. Then, I saw the AI program at RUG and liked it. I consider applying to this program the best decision I've made.

I realized that Computing Science is too programming- and math-heavy. AI is a very relevant topic, and the program is a sweet spot between the technical and the creative side of things. I especially like subjects like Cognitive Psychology, since you not only get to learn about the technical aspects of the human mind, but you also get to learn about yourself.

Despite how interesting it is, I do find the AI program a bit too general and broad, hence why I am currently not considering doing an AI Master's. I'm hoping to do a CS Master's instead with a certain specialization.

HOW WAS THE TRANSITION FROM HIGH SCHOOL TO UNIVERSITY? WHAT WERE THE MAIN DIFFERENCES?

Having a great mentor really helped! I would describe the transition as anything but smooth, but not messy. I did apply to many universities, and the RUG was one of my last options. I found housing very late. I also still needed to handle some paperwork back home, so handling a lot of things at the same time was stressful.



After graduating high school, I did not expect this change to be such a huge one. Moving from high school to university, especially as an international student, was quite a big change. It entailed moving to a new country, a new study, all in a new environment away from your family. After I got here and sorted out the housing, I was happy - **university is more engaging and fun compared to high school.** My experience in Indonesian high school felt a lot like a “boot camp” where we were obliged to do a lot of activities. I do not feel such an obligation at university, **I am able to be flexible with my studies.**

HOW DO YOU MANAGE YOUR TIME?

I stick to routine. I schedule enough free time, while also allowing myself to be flexible and do whatever I want in that free time. Once already in the routine, it is not too difficult to keep track of time.

The block system in this university is different from how it was in my high school - subjects would change on a yearly basis, not a quarterly basis. I also had six subjects at a time, rather than three at a time.

WHAT'S YOUR BIGGEST PIECE OF ADVICE FOR OTHER STUDENTS?

I will relay some advice my dad gave me - study hard, and leave some time for yourself to do your own thing besides studying. University is a good time to find what you enjoy in life.

MEERKE - 3RD YEAR CS BACHELOR STUDENT

Current RoomCee and HEROcee member. She likes playing the piano, hanging out with friends and playing video games (especially from The Legend of Zelda series).

WHAT WERE YOUR EXPECTATIONS BEFORE STARTING UNIVERSITY? WERE THOSE EXPECTATIONS MET?

Not really - I started the program without any programming experience. I knew I liked problem-solving and math in high school, so it was a choice between Computing Science and Mathematics. I went with Computing Science in the end because it was less abstract - it turned out way better than I expected.

Fun fact: I actually played a game of chess against dr. A. Meijster when I was 12, because we were both part of the same chess club.

What did you think about the past academic year?

Covid began halfway through my first year. By the third period, all my exams got canceled or postponed so at I had five exams in one-and-a-half weeks at the end of my first year. I was able to pass four of them. That made me very stressed for the entirety of my first year, and it took me until June to find out if I passed my BSA or not. I unfortunately got Covid in my second year and have had some long-term effects



(like constant fatigue), so decided to take four years for my bachelor - this decision made things a lot better when it came to time pressure.

The people taking the courses with me were more like-minded than I expected. I like the fact that the assignments play a big role in your final grade - I prefer working rather than memorizing. If you like problem-solving and getting feedback instead of just memorizing things, I think Computing Science is a really nice degree choice.

How do you feel about the upcoming transition following the Bachelors?

I am planning on continuing a Master in Groningen in Computing Science specializing in Data Science and Systems Complexity. There is an opportunity to switch tracks when started, so there is more flexibility there than in the Bachelors. I think it will be very fun focusing on projects and choosing almost all your courses.

I was debating whether I wanted to continue with a Masters at all, and questioned if it would be too difficult since I was struggling with the Bachelors at some people, and they told me that the Masters is a natural continuation of the Bachelors - the first-year Masters courses are similar in difficulty as last-year Bachelors courses. I like studying and student life, so that reassurance motivated me to continue with my academic journey.

HOW DO YOU MANAGE YOUR TIME?

I am very bad at planning. Funnily enough, I try to go to university as much as possible, as I tend to work better here than at home. Even if you are socializing a bit, you still get some work done. I combine social things with studying this way. I don't really have a bunch of hours to work on the thesis, so you have a lot of free time to work on it however you want. These days I work from 10:00 to 17:00, take a break halfway through, and use some study methods from the Pomodoro technique [cycling 25 min. on task with a 5 min. break]. If I am in the Cover room, I have incentives to get distracted, so this helps in that way. I recommend using this method, as it was recommended when starting the Bachelors project.

DO YOU KNOW ANY TIPS AND TRICKS STUDENTS SHOULD KNOW?

Keep one day free in the entire week to recharge. Try to split a big task in smaller, more manageable tasks. Scheduling in advance helps as well - we have a course for this in CS called "Research Skills".

WHAT'S YOUR BIGGEST PIECE OF ADVICE FOR OTHER STUDENTS?

Enjoy your student life! I feel like I was robbed due to Covid, so make the best out of it. There is so much more to student life than just studying, so try to get as much experience as you can.



NAM – 3RD YEAR AI BACHELOR STUDENT

Likes cooking and playing video games, especially Super Smash Bros, and is part of the Cover Super Smash Bros Club.

WHAT WERE YOUR EXPECTATIONS BEFORE STARTING UNIVERSITY? WERE THOSE EXPECTATIONS MET?

I didn't start with AI - I started in Groningen studying Psychology. When I heard there was an AI bachelor, I switched to it. I found myself enjoying coding a lot, and I found something that I am really good at. I didn't actually have any programming experience before I came to study AI. I managed to teach myself programming by solving exercises and did an online course for programming in C, which helped me a lot with passing the Imperative Programming course. If you go into AI/CS and you are unsure of your programming skills, I would say do some basic programming in the summer. Just learning the concepts will make the learning process much quicker. I think our math courses aren't that difficult. We don't really do a lot of databases and software, which is a bit of a shame - it is very necessary for a lot of things AI-related.

In general it's a pretty good program, that covers a lot of subfields. Maybe making some courses optional would be better. I felt some courses, although very interesting, aren't necessary useful for certain tracks,

and going through them felt like a chore. You have to balance a lot of courses out because AI is a very interdisciplinary field.

What did you think about the past academic year?

I think this year is one of the more critical years, since I am graduating and I'm deciding where to go for my Masters. I will probably end up going to Eindhoven to study. I feel like students here in particular should have access to more CS electives, because they are very useful for helping to choose a Masters - I don't understand why there is a separation. I also applied to the VU in Amsterdam. I didn't really consider studying abroad since it's much easier to stay here in the Netherlands.

WHAT CHALLENGES DID YOU FACE IN YOUR FIRST YEAR? HOW DID YOU OVERCOME THEM?

My first year was definitely different compared to the newer generations. Getting to know people was quite a challenge during the Covid year - I only talked with very few people.

The second year became much easier, since going to classes helped you find your group of people. Contrary to other people, I did better during Covid workload-wise since there was nothing else to do daily other than assignments.



HOW DO YOU MANAGE YOUR TIME?

Especially in the last block, time management is more critical. I am also taking the Software Engineering course from Computing Science, so it is a lot of work. Struggling to plan things can lead to a lot of work piling up.

Some advice regarding the Bachelor's Thesis - start early! I chose a difficult topic, but almost always the biggest bulk of the work is in the last block. Choose your supervisor wisely, it does make a big difference! If they are helpful to you, it makes the whole process so much easier.

WHAT'S YOUR BIGGEST PIECE OF ADVICE FOR OTHER STUDENTS?

For first-years: study for all your courses. Personally, I like to do well academically so I don't let stuff pile up too much.

Taking five courses in a block is not fun and it makes you miserable. You can slack off a bit but at some point you can't do that anymore.



Alexandra Thudor



Xenia Demetriou



Eduard-Raul Kőntőš



On the journey of Cover

Part



Alexandra Thudor



We talked with dr. Ben Wolf, Chairperson of Board XX, to discuss his journey within Cover and onwards into academia.

When choosing what to study, I was indecisive between Life Sciences & Technology or AI, because I wanted to learn things about the brain. In my infinite wisdom and because our middle schools forced it upon us, we had to join a Student-for-a-Day information session for our studies of choice, so I did that for both. There were some senior students from Life Sciences & Technology showing us around, but I couldn't really connect with those people. I would ask them questions about their studies and what they were planning to do after their studies, and they were a little bit cold.

I then went to the two-day student event for AI that was organised by Cover members. I remember on the first day when we were waiting in between mini-lectures, we watched a Futurama episode and then we went into the town to go pooling. You could even sleep at a senior student's place. That was just a fun experience altogether. So I knew right then and there that I will be studying AI, because I could connect with that group of people. I also went to the introductory camp, and I think about 10 to 15 minutes in, the then-Commissioner of Internal Affairs said to me:

"Oh you like doing stuff, right? You will be in the First Years Committee." I've been on plenty of committees since then [First Years Committee in 2009, StudCee in 2010-2011, YearbookCee in 2011-2012, PRcie/ComExA in 2012, ExCee in 2013-2014, Promotie/PropaganDee in 2013, and Brainstorm/DisCover in 2015].

During my board year, a lot of the committees were empty and had to be filled in, so we as a Board filled them in ourselves as well. I don't mind helping the association out, and doing a committee is the perfect way to do that and make new friends. Of course you hang out with the people in Cover that you know, but by joining a committee, you get to know more people from different programs or years of study. If you are in a committee with a senior, they can help you out with university in one way or another, or you can do the same for students in earlier years than you.

What made you decide to do a board year and how was the experience at that time?

Because I was already involved in a couple of committees, someone from my year, Diederick Kaaij [Commissioner of Internal Affairs of Board XIX] (he already did a

board year in his second year of studying, and it was close to the end of our second year of studying) asked if I wanted to do a board year since he saw me as such a responsible person. He proposed to me that I become the Secretary. I considered the thought, but it implied a lot of time and I wasn't sure if it would work out in my schedule. Back then, I was also in the first generation of Honours students – I was trying to complete that as well. I thought maybe I could still get my Bachelor's degree in three years, but at the end of my second year I realised I couldn't. I could only finish Honours, and thought "Why not spread this final year of studying over two years? Let's just do this board year." That's basically why I did it. Of course, former Board members always try to persuade you to do a board year because it's a nice experience and you learn a lot of things. I didn't know that at the start, but in hindsight I know now. It began with a person recommending it to me and realising I actually had the time to do it, no illusion of grandeur or anything like that. I applied for two functions, Secretary and Chairperson, and luckily I got to become the Chairperson of the XXth board of Cover.

Do you think it was different doing a board year at that time than it is currently?

Our board year was very challenging because Cover was broke, so we had to say no to a lot of great ideas (because there wasn't enough money to implement them all) or cut down on the number of activities. That was a bummer. For example, the white ties that are given to the candidate board are a gift from our board because there was no money to buy them from Cover funds – this would of course be a non-issue for the current state of Cover. There were a lot of debates involved, like choosing which committee could get their maximum budget. We had a double budget back then as we were having financial troubles and didn't know the financial situation fully, so every committee had to submit two budgets: a minimum and a maximum value for their activities. There was this weird political situation in which the Board could decide which committee got their maximum budget first, so if Maarten (our Commissioner of External Affairs) got some more sponsor money, then some committees could organise some more activities.

How did you decide which committees deserved the maximum budget more, because they are all so different and tackle different parts of the association?

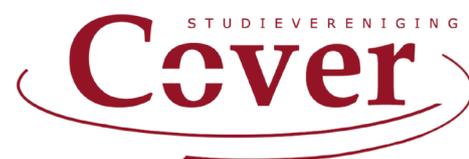
I don't remember how we did it, but it was probably around the line of supporting one "serious committee" and one "fun committee". Very expensive events like the symposium were done on a shoestring budget, if at all. That was how a board year was back then, particularly in my year, compared to now.

Was the process of finding a candidate board difficult? Were people interested in doing a board year or did you have to promote it heavily?

It was difficult for us to find a candidate board [Board XXI], but I feel like it's been difficult for most years. Board "Ad Hominem" was a board in which it was easy to find six people. I don't remember the process entirely, but we had a board interest night and an open board meeting, so promotional board activities were still a thing. Finding people that really wanted to spend some time doing a board year, especially in the period where students' finances were turned into a loan instead of partly a gift, was a rough time for Cover. People really wanted to finish their studies on time rather than do these sort of extracurricular activities. We did have board grants in my year – even though it was a lot less than it is now, it did offset some costs. That is why we as a board didn't feel too bad about spending a little bit of our own money to help Cover get back on its feet and do fun activities. I'm very happy that it's not necessary anymore for Cover board members to spend a lot of their own money during a board year.

You also witnessed Cover becoming more international and the smooth transition from Dutch to English.

Of course there were some discrete moments in which things changed. I remember the discussion about having the GA [General Assembly] language switch from Dutch to English. That was heavily looked down upon by older members, who came up with arguments like "I can express myself better in Dutch" and "It's more convenient to talk in Dutch because



you have some nuances and can really convey your opinion more precisely. In English it would be more coarse” etc. It was the last year to finish a Dutch AI Bachelor before the program became international and taught in English, so most of the material was in English anyway. It switched gradually, but there were definitely some tough stepping stones. Some members tried to impose English in the Cover room, which is something I also had to get used to, but over time, I could make the switch just fine.

I believe this switch also helped the association grow in size since it became more accessible to more students.

Yes, that was the main arguments why Cover wanted to switch to English. That was one of the complaints: when international students first came into the Cover room at the beginning of the year, it was fun for them because they could grab a snack or play some games. But when social events started happening, most people talked in Dutch, which was off-putting to them. We were also the first board to organise a member weekend, but that’s not entirely only our idea. I think it was something Board XVIII tried to organise but couldn’t, then Board XIX just didn’t. I think the External Affairs of Board XVIII, Dirk, said “You know what would be fun? A member weekend!” during a GA, and he kept repeating that at every GA during Board XIX. When we became board, we were like “Let’s try to organise a member weekend!” The introductory camp is cool and all, but it started to become so popular that less and less seniors could join. So this basically split up the activities. The introductory camp would be mostly IntroCee, some seniors and Board that could help them, and HEROcee. Then we could have another weekend where we just have fun activities, and are not responsible for all those first years.

What were the highlights of your board year? What made your board year memorable? What did you learn by doing a board year?

The most impactful things were probably the problems and the struggles that we dealt with along the way and how we tried to tackle them. I think those were the most important lessons. There were also positive things, like the member weekend, and becoming so much more involved in student life and culture by going to constitutional drinks of other

“You learn a lot more about yourself, about student life, about work ethic, and resolving differences.”

boards and making a lot of new friends, also outside your studies. I think that was a really great time. I am still friends with the AI board from Nijmegen (CognAC) from my year. I’m still in touch with the chairperson from that year, Roland Meertens; we occasionally chat sometimes. When I didn’t have access to paper as a Groningen employee, I asked Jelte van Waterschoot [Secretary of CognAC in 2011-2012]. Because he was doing a PhD in Twente, he had access to it, so I could just ask him to provide it – those are nice things. There are some lasting connections from doing a board year. You learn how to handle things in a serious matter – there are some consequences but they are small. It’s a playing field of what it would be like to be in an organisation and having to deal with all types of issues and people.



Your boss is basically the GA, building management, and all the staff members. Recruiters (but also people in academia) really value you doing a board year because you have that experience of applying people-skills and problem solving. It’s definitely a unique experience and I think everybody should consider doing it if they have the time and determination, because you learn a lot more about yourself, about student life, about work ethic, and resolving differences.

So you get the experience you couldn't have gotten at that time in your life?

Absolutely. I'm still friends with my board members and we still hang out a couple of times a year. That's great, to have a default group of friends with whom you can just have a BBQ and talk about the good old times. You spend so much time together that you do start to grow close to each other in general.

Do you know of any old traditions that aren't a thing anymore?

Some things disappeared, like how Brainstorm made way for DisCover. The first year committee is also gone – it had a good function but I'm not sure it would be something I would try to bring back. One tradition that kind of faded out is that every day after 16:00 you could get beers in the Cover room, so not only on Thursday during the TAD [Thursday Afternoon Drinks]. That is still a thing, but not a lot of members do that anymore. We had a counting system: if you wanted to get a beer, you would say "one" and another person could say "two", so that you knew you needed to get two beers from the fridge and hand them out. I still do that at home! I think the drinking culture as a whole has separated from Cover, which is not necessarily a bad thing. There also used to be a time when the social changed every month, alternating between a sit-down and a party-type of social.

And some traditions like constitutional drinks were still present at that time.

Yes. We had constitutional drinks, which is an event for the other boards to come congratulate the current Cover board on being constitutionalised. But we were the first to introduce a similar event where members could show up. Before my time, both board members and Cover members could show up to constitutional drinks, so what we did was split that event up. That was fun, having an activity just for members to drink beer on our costs while we were broke. It wasn't a lot of money for the drinks, maybe like 100 euros, and of course as Board XX we paid some money ourselves for extra beers. We introduced the Cover red ties and the Cover red colour; before it was a bordeaux red which we mockingly called brown. The shape of our stickers were from before though (either from Board XIV or Board XIX). Our oval shape stickers are very recognisable and unique and I'm glad we kept that style.

What made you decide to remain at the RUG?

Deciding to pursue a PhD after my Master's was a complicated decision – you never do a PhD without thinking a lot about it. In my case, I was doing a Master's project about making sensors for underwater sensing. This Master's project was done in the context of a larger project, which was a European consortium involving companies in Scotland and Estonia [Heriot Watt University in Edinburgh, and Tallinn University of Technology]. I knew that the University of Groningen still had to fill in a PhD position for that, so somewhere near the end of my Master's project my supervisor asked me if I would consider working on the project for four more years and make this into a PhD. I thought them asking me was already a good sign because they think I am a capable candidate. I was still closely knit with Cover and I liked being a student here – it was a stable position to be in and to enjoy some extra student time. So I was happy to be staying in Groningen for another four years, because it is a nice place to be in and I liked the project proposed, so I decided then and there that I was going to pursue a PhD. A nice bonus was of course the offer to travel to Tallinn or Edinburgh for an exchange visit.

“Would I recommend doing a PhD in Groningen though? Absolutely.”

For doing a PhD, my advice for students would be to make sure you get along well with your supervisor, that they provide good feedback, and that you like the topic and the place. For me, the place definitely came first; it was a nice, comfortable decision to stick around. I would definitely recommend doing your PhD in a different place from your Master's or Bachelor's, because people like to hire people that have experience from multiple countries or universities. There is a lot of value in doing that, because you get to know a lot of new professors with different expertise in other areas that you didn't know of before. Here, I know a lot of things that are happening in Groningen, and because of my time in Delft, I also know a bit about what is happening there. I think it's different from doing a PhD in a completely different place than your

Master's. You still get a lot of supervision as a PhD student, so it doesn't really matter if you have to start from ground zero. Would I recommend doing a PhD in Groningen though? Absolutely.

Tell me more about your PhD/Master's project.

The Master's course I was doing was on cochlear mechanics, so how your inner ear and hair cells work. There was a special chapter that mentioned hair cells on fish scales that are not used to hear, but to sense vibrations and turbulences in water. We were taught that fish use these sensors to do things like schooling or detect when a predator is coming from behind. This PhD project was trying to recreate a bionic version of that, so making our own underwater flow sensors that could complete the same kind of tasks a biological sensor could.

How does it feel like to be on the other side of things, going from a student to a lecturer in the same place?

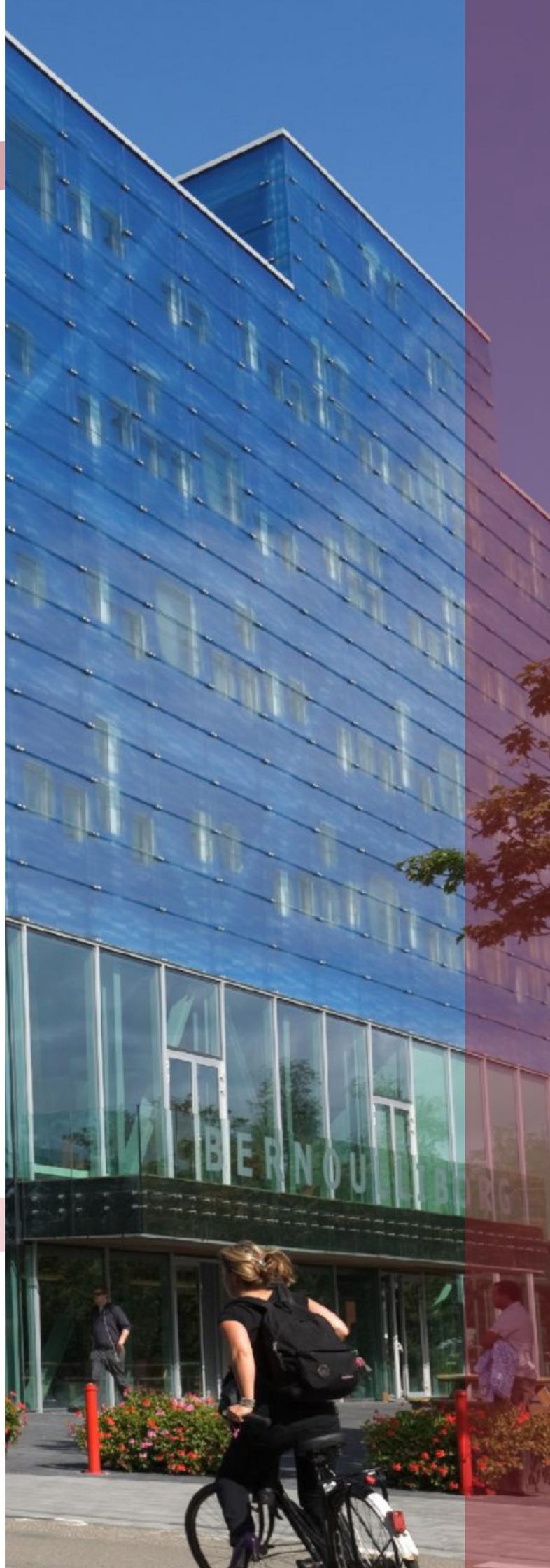
I think it's nice to remember the student perspective. I don't think I like one side better, but I think it's great that I got to experience both sides. I still remember how it was like when, for example, the slides were a bit messed up or an assignment was unclear, so I try to take that into account now when shaping a course.

Any last thoughts?

I think it's great that there's going to be another Discover and another yearbook! I worked on both during my time in Cover; I always have a place in my heart for printed media, so I am happy that it's coming back.

Where do you think your journey's heading towards now?

I don't really know. Through coincidence and dumb luck, I ended up in the same department that I left two years ago and the same apartment complex as two years ago, so it all feels very familiar to me. Academia is a weird little place; there are a lot of avenues for getting temporary jobs, but at some point I might want to get something more stable which is really tricky. I try to look for tenure track positions in fields that I like or that I can contribute to, for instance robotics or applied machine learning. I don't know what the future will bring. For now I'm focusing on helping out in the robotics course for this academic year, and then I'll see what will happen next!





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