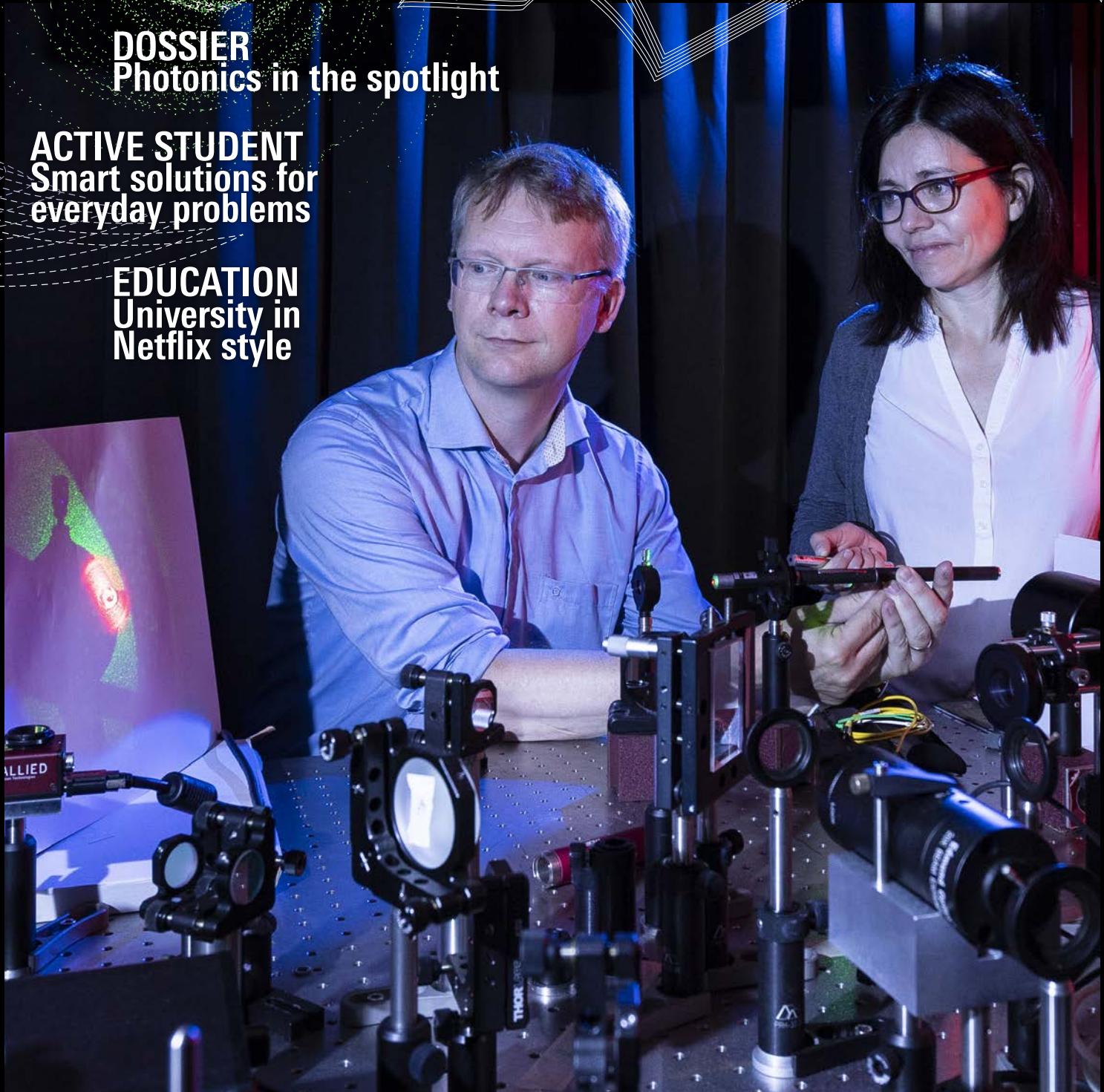


UNIVERSITY OF TWENTE.

DOSSIER
Photonics in the spotlight

ACTIVE STUDENT
Smart solutions for
everyday problems

EDUCATION
University in
Netflix style



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Cover image: Rikkert Harink



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INCUBASE

Earlier this year, there was a nice infographic in the Volkskrant. Its subject: the university as a nursing room for businesses. The “stain” in Twente was the largest in the Netherlands in this image, visualising the more than 1,000 spin-offs that the University of Twente has produced, 200 of which were born in the past five years alone. We continue to play a leading role when it comes to entrepreneurship, but to maintain that position, we have to continuously reinvent ourselves.

We are hard at work to do just that. During the annual Entrepreneurial Day, which was held in late June, we launched Incubase, a new hub for start-ups, together with the Student Union and Novel-T. Starting in November, entrepreneurial students will receive close supervision to help them make their dreams come true in the Bastille building on campus, which many alumni will know as the central student building. It never ceases to amaze me that I encounter students on campus with the most innovative ideas every single day. They face the challenge of translating their plans into a viable start-up. Incubase will soon offer everything these prospective entrepreneurs need: flexible work-spaces, a large network of small businesses, investors and legal expertise. In other words, it is a perfect example of how the University strives to reinvent itself.

With this new meeting ground, we are also taking a step towards talent retention, which is a mission we all support in the region. It is my hope that I can soon sign the regional deal Twente: an investment programme that involves the national and provincial governments, the region of Twente, businesses and knowledge institutions and offers a total of 172 million euros for co-financing. This money is to be used to tackle various issues, such as the development of the top work locations in Twente, the realisation of a smart manufacturing industry 4.0 and a future-oriented employment market and the transition towards a circular economy. The UT plays a major role in many of these projects. Twente will receive a large slice of the regional pie – and for good reason. To me, this confirms that the national government sees the region of Twente, with the UT as its major innovator, as a powerful stimulus for the Dutch economy.

Talent is a key aspect of many of the aforementioned projects. That is why I want to ask you, the University's alumni and relations, to contribute to this mission. The UT and Twente need all those young talents I see every day, now more than ever. Let's offer them all the proactive support we can. •



"TO ME, THIS CONFIRMS THAT THE NATIONAL GOVERNMENT SEES THE REGION OF TWENTE, WITH THE UT AS ITS MAJOR INNOVATOR, AS A POWERFUL STIMULUS FOR THE DUTCH ECONOMY"



VICTOR VAN DER CHIJS, LL.M.,
(1960) CHAIRMAN OF THE UNIVERSITY OF TWENTE EXECUTIVE BOARD SINCE OCTOBER 2013.

From crystals that capture a single photon to chips for high-speed optical communication and new sensors to be used in the healthcare sector: together with its partners, the UT is working on photonics in various fields. This discipline is expanding rapidly from niches to major markets. BY Wiebe van der Veen PHOTOGRAPHY Rikkert Harink

Photonics is the technology of light. Transporting, processing and manipulating light. Despite this, the revolution has thus far mainly taken place in the shadows. The shadow of electronics. "Electronics have always had a head start in this field," says professor Pepijn Pinkse. "Now that we are approaching its limits, photonics can offer alternative solutions or be combined with electronics." His colleague, professor Sonia García Blanco, says: "I recently read a book from the '70s. It described photonic components that we are still publishing about today. These days, however, we know how to develop light conductors with extremely small losses thanks to our MESA+ NanoLab. We excel at that."

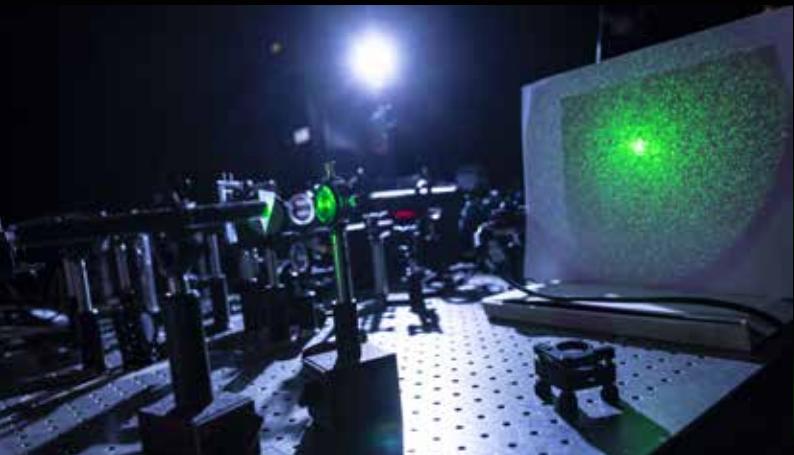
They are both working on new applications for photonics – or, to be more exact, integrated photonics.

Chips that have light channels for photons, instead of metal connections for electrons. Sonia García Blanco wants to develop a photonic chip that can detect tumour markers with an extreme degree of precision. "We are developing the sensors for that, but we would like to put the light source on the same chip. Perhaps the readout as well. This could be a major innovation for the healthcare and self-care sectors. To realise that, though, the chips would have to be very cheap and suitable for single use. That is a chicken-and-egg situation, because the only way to achieve cheap production is by having a major sales market." She shows a small chip: it is like a jewel with visible light conductors and fluid channels. It is capable of detecting small quantities of proteins in urine that serve as an indicator of tumours and has the potential to drastically change the healthcare sector.

Uncrackable

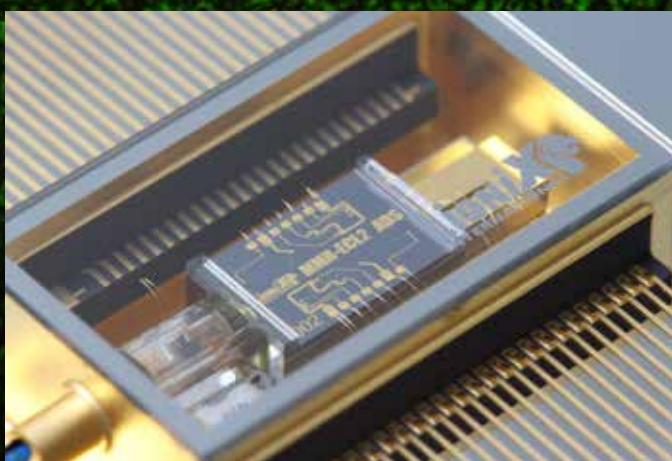
Pepijn Pinkse is researching remarkable quantum effects with light. The colleagues in his group also know how to manipulate light. Take a photon's ability to be in two places at once, for example, and the fact that this property can be used for a unique and uncrackable identification method. "When you send light through white paint, most of it will be blocked. However, depending on the light you send in – i.e. the 'question' you ask – you get an 'answer' in the form of a unique pattern of dots." Pinkse explains. The key is determined on site, so you would no longer have to remember codes. Even though it is easy to put a small drop of paint on passports and credit cards, it does require new readout equipment. Thus far, this technology is therefore mainly suitable for access control to high-risk areas such as

PHOTONICS IN



"Personally, I believe the way this processor works to be similar to the networks in our own brain" - Pepijn Pinkse

THE SPOTLIGHT



PHOTONICS

Earlier this year, three Nobel Prize winners emphasised the fact that photonics is one of the key technologies for innovation in their call to the European Commission to explicitly keep photonics on the agenda for the new research programmes for 2021 to 2026. The Netherlands is investing heavily in this field as well, e.g. in the form of the cooperative alliance Photon-Delta. The University of Twente and its partners play a significant role in these developments.

nuclear power plants and control rooms. Another interesting question is whether this same technology can be used to secure a fibreglass network, so you can know with absolute certainty that the right person is on the other side of the connection. The researchers are also working on that form of physical security.

Other UT researchers developed a technique with which to send light through opaque materials such as – there it is again – white paint. Light is mostly reflected and travels every which way inside the paint. The result is that hardly anything makes it through to the other side. Nevertheless, it is possible to program the light in such a way that a clear bundle of rays appears on the other side of the material. Around a decade ago, this was such a fundamental breakthrough that the American Institute of Physics qualified it as one of the “top ten physics news stories.” These days, the researchers are trying to find out if this technique can be used to look deeper into human tissue.

Other photonics researchers from Twente and the spin-off LioniX International managed to develop a laser that broke world records with its accuracy. The laser is entirely integrated on a chip. “We have been working with labs full of lasers for a long time, for example to get the light in a photonic chip. Those are large pieces of equipment. Now we are able to put a well-performing laser on a chip. It produces very ‘clean’ light, as colleague Klaus Boller put it,” Pinkse explains. The lines of communication between the researchers and LioniX are kept short, so they can collaborate closely on this cutting-edge technology.

Quantum processor

All this sometimes leads to unexpected discoveries. Just look at the story of the quantum processor, for which a new business – QuiX –

was recently founded. This is a photonic chip that was originally developed for the new 5G mobile standard. It is known as a “beamformer,” capable of sending data very precisely from the cell tower to the user. It turned out this chip could also be used to create a processor that makes use of the remarkable properties of photons. One such property, quantum entanglement, allows photons to be linked together even at great distances. The quantum processor has little in common with the processors found in today’s computers and seems mostly suitable for highly specific calculations. “There is still a lot of speculation about the potential of quantum computing. It is unclear what such a computer can and cannot do, exactly. At the same time, the hardware needed to experiment with is not available yet. Now, we do offer that experimental platform. Our main goal is to develop it further for use at universities and in R&D departments in an effort to advance our knowledge. Personally, I believe the way this processor works to be similar to the networks in our own brain. That would be perfect for the UT’s new Centre for Brain-Inspired Nano Systems,” Pinkse says.

Tests

The major markets for photonics are expected to be the new mobile standard 5G – for high-speed communication between cell towers and for the accurate transmission of data streams. Photonics can also be used in new generations of Global Positioning Systems (GPS). Self-driving cars are equipped with laser technology that allows them to explore their surroundings and make assessments: this LIDAR technology also requires photonics chips in every vehicle. These major markets are also important for Sonia García Blanco in order to make the specialised chips she is developing more affordable. “I know the world of semiconductors inside and out, because I used to

work in that field. They have refined their methods of mass production and developed highly advanced ways to test chips. At the moment, all we can do is look at those methods longingly.”

Photons in prison

In the meantime, light continues to surprise us: Pinkse’s colleagues recently published a way to capture a photon in a three-dimensional prison. To do that, they created special crystals in the NanoLab. By deliberately adding an irregularity to such a crystal, it suddenly gets different properties. An interesting question is whether you can use this technique to develop extremely compact light sources or store information in a single photon. It goes way beyond our imagination at the moment, but it is certainly an exciting idea.

The future of photonics appears to lie with “hybrid” solutions: combinations of technologies that are cleverly linked together. For example, there are three different light-conductive materials that can be used to create chips, each with their own pros and cons. Then there are the integration with electronics chips and the combination with systems for fluid processing at the micro scale, which is mainly used in sensor applications. Photonics brings together various areas of research in which the UT excels.

ASSEMBLY: FROM BOTTLENECK TO GROWTH MARKET

At the moment, the majority of the costs of a photonic chip comes from the assembly process. That means the chip itself is not the biggest cost item, but rather the connection and the packaging in a casing. This often involves linking together different types of chips and connecting them to the outside world via fibreglass connections. In the world of standard electronics, assembly is a relatively minor expense. If it is up to Albert Hasper, CEO of PHIX Photonics Assembly, which is based in the “High Tech Factory” on the UT campus, the field of photonics should head in that direction as well to make it more affordable.



"It is so expensive at the moment because it involves a lot of manual labour and because there is no standard. Everyone is doing their own thing, which inhibits the automation of the process."

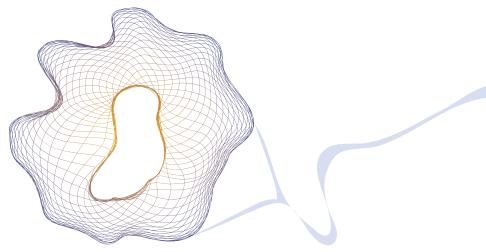
In the High Tech Factory, photonic chips are assembled in a partly manual, partly automated manner. At the moment, this is done for clients who purchase a few dozen chips at most. Each of these chips is a marvel of high-tech innovation. "However, once photonic chips are introduced in the telecommunication sector, we are talking about large volumes: hundreds of thousands and even millions of chips. The automotive sector is another example. Once the self-driving car becomes commonplace, each vehicle

might contain as many as ten photonic chips. In order to think along about the layout and connections, we like to get involved as early as possible." PHIX is now working hard to further automate the process, for example the positioning and attachment of fibreglass connections with an extreme degree of precision. To realise this, the organisation is collaborating with the Fraunhofer Project Centre, which is also found on the UT campus. It has developed a flexible assembly platform for PHIX. Photonics assembly has enormous growth potential and could easily involve as many as 1,000 highly qualified operators in Twente alone. Hasper: "Whoever manages to set the standard in this field is sitting on a goldmine."



IN BRIEF

SHAPING 2030



UNIQUE AND DIFFERENT

With its new vision and mission – shaping 2030 – the UT is preparing for the future and the developments that come with it. The University wants its new strategy to be both ambitious and unique, show pride and give the institution the ability to

chart its own course. It is the proverbial dot on the horizon. According to Victor van der Chijs, chairman of the Executive Board, the UT opts for a unique and different approach as a people-oriented technical university.



PEOPLE COME FIRST

One of the key characteristics is that people and society come first when creating and applying technology.

"That is reflected in our slogan, but we have never had a clearly defined mission before. The first thing we did was ask ourselves what our purpose as an organisation is," says Van der Chijs. "It boils down to this: as a technical university, we provide our own answers to social challenges. Technology has a lot of benefits, but it also has unwanted side-effects such as growing social differences. As a society, we have to find a way to deal with those issues properly. We choose to profile ourselves as a people-oriented technical university: people always come first in our education and research. We recognise and accept our social responsibility."

EIGHT INSPIRATION SESSIONS

The input for the University's new mission and vision came from eight inspiration sessions. External experts talked about the topics of the future, including digitisation and big data, artificial intelligence and society and the future of businesses and their sustainability. Those are just a few of the topics that

were covered during these sessions. There were also Moonshot events, a Create Tomorrow, various round-table sessions and a talk with students of the Stedelijk Lyceum Kottenpark. All this provided a wealth of input that was used to develop the UT's new mission and vision.

CHAIRMAN OF THE BOARD VAN DER CHIJS: THREE CHALLENGES

With its vision, the UT enters three areas where it strives to make a difference: social, sustainable and digital. Chairman of the Board Van der Chijs: "Some people are unable to keep up or feel intimidated about how technology is affecting their careers. The UT's job is to make clear choices and help society treat technology responsibly." Another important challenge is sustainability. "In our own way, we contribute to the effort of keeping mankind and nature healthy – not only by making our campus more sustainable, but also via the choices we make with regards to our curricula, research projects and business operations," says the chairman.

"As a technical university, we provide our own answers to social challenges"



SIX AMBITIONS

As part of its new vision and mission, the UT has outlined six challenges that it will take on:

LEADING THE CHANGE: Charting its own course and playing a leading role in the changes that are brought about by technological developments, digitisation and ongoing geopolitical developments.

STUDENT-CENTRED: The UT strives to be there where its students are and remain relevant during every phase of its alumni's professional careers.

PIONEERING: Take the University's entrepreneurship to the next level and develop new standards for public-private collaborations.

NETWORKED: By 2030, the UT has developed a comprehensive ecosystem that allows it to create maximum impact.

EMPOWERING: An adaptive, resilient and responsive attitude. Collaboration centred around trust and transparency. The UT strives to facilitate students and employees alike during their learning and development processes.

PERSONAL GROWTH: Stimulate talent and leadership development in students and staff. Create an environment in which talent of all ages and backgrounds is intrinsically motivated and allowed to develop itself and others.



WHAT'S NEXT

Over the coming months, the UT's strategy for the period from 2020 to 2022 will be developed further based on the conceptual mission and vision. Four strategy working groups will be formed. On 3 July, the Executive Board discussed the general outlines with the Strategic Council. In the following months, any further developments will of course be discussed on a larger scale in the organisation. Eventually, an integrated mission, vision and strategy will be presented to the University Council and the Supervisory Board in December of 2019.



If you would like to know more and think along, let us know via: utwente.nl/en/organization/shaping2030/share-your-idea/



This spring, she was the 5000th PhD researcher to conduct her doctoral research at the UT and obtain her doctoral degree. Even without that festive occasion, Anna Priante had already lost her heart to the UT. "When I read the vacancy text for the project, conducting research into the effectiveness of social media in healthcare campaigns, I immediately knew this was it."

BY Frederike Krommendijk PHOTOGRAPHY Frans Nikkels

THE POWER OF

ANNA PRIANTE 5000TH PHD RESEARCHER

Sometimes, it is best not to know things in advance. Priante only found out it would not be a standard day two days before her thesis defence. Because she was the five thousandth PhD candidate to obtain her doctoral degree from the UT, rector Thom Palstra would serve as chairman of the committee. "I had no idea beforehand, but I immediately thought it was both a huge honour and a major responsibility. They truly made something festive of it, too. It would have been a special day regardless, but being the five thousandth was the cherry on top."

Priante started at the UT in mid-May of 2015. She completed the Sociology bachelor's and master's programmes at the university of Trento in her native country of Italy. During

her master's, she spent some time in Sweden. That experience left her wanting more. "A new country, a different educational system, experiencing new things. I found out that this was the perfect way for me to develop myself on both a personal and professional level." When she read the vacancy text for the research project at the University of Twente online, everything came together. "This research was so similar to what I had envisioned in my head and the UT already had a wealth of usable data available. Luckily, they chose me out of the final five candidates."

She left Italy and headed for the rainy Twente. "I was given a tour of the campus and got drenched to the bone. The people made me

feel so welcome here though. The greenery, the friendly atmosphere – I felt right at home."

As part of her research project, she studied the effectiveness of cancer awareness campaigns on Twitter. "Social media allows you to reach large groups of people easily and quickly, but is it effective? Can you truly make people aware of the fact that they can take offline measures to e.g. visit a doctor, take part in a cancer screening study, etcetera? Or is it all too easy to hit that "Like" button and forget about it just as quickly, without really getting the message? How can you make sure that correct information with a solid scientific foundation counters the rampant falsehoods and nonsense found on social media?"



"People feel so connected to each other on social media that they are willing to donate money without getting anything in return. That fascinates me"

SOCIAL MEDIA

One of her conclusions was that, although social media is an essential tool for quickly distributing information and bringing people together, a connection to real life is needed to get people to take action with a campaign. "The information can give you new insights and raise awareness. You also find other people in similar positions. It should primarily be a nudge to get people to take action in real life."

Priante researched the Movember movement campaign. The title of her dissertation is derived from that: "Tweet your #Mo and Save a Bro." Movember was thought up by three friends in Australia sixteen years ago. Today, it is a global movement that raises awareness for prostate cancer and testicular

cancer. "The message that these tough guys are spreading is to talk about your issues and go to a doctor if you are unsure or worried about something. They are trying to get rid of the stereotype that men should tough it out, instead of seeking professional help. They successfully opened this issue up for discussion and raised \$55 million in funding."

The right use of social media can produce small miracles, in other words. "It is the first step towards raising awareness and bringing people together. However, it has to be combined with strategies in real life, e.g. medical crowdfunding. A patient comes into contact on social media with a possible treatment that is being offered abroad, which

they might otherwise never have heard of. If their insurance does not cover it, however, they can use social media to raise the money instead. I find it fascinating that social media makes people feel so connected to each other that they are willing to donate money without getting anything in return. Online connections have tremendous power."

What about all those nonsensical stories about miraculous diets and quackery? "That aspect should certainly not be ignored. It is up to organisations with scientific authority to have a good and clear social media presence in order to tell the real story. That is the only way to counter the false information."

More and more students take to crowdfunding to finance their projects. The University Fund Twente allows them to do that for free on the UT's own crowdfunding page. In the five years since its introduction, more than €55,000 has been raised in this manner.



FAMILY, FRIENDS AND ACQUAINTANCES DONATE **CROWDFUNDING CAMPAIGNS**

The Solar Boat Twente team, a group of students working to develop a reliable boat powered by solar energy, started its own crowdfunding campaign earlier this year. Their goal is to raise €5,000 for new and more efficient solar panels. "Each solar cell costs around €25 and we need more than five hundred," the team explains on the website. A significant expense, in other words. That explains the call for financial aid, so the team can focus its efforts on crossing the finish line as quickly as possible.

The donors get something in return for their contribution. The more they give, the better their reward. Those who give €10 will have their name listed on the Solar Boat website. The generous soul who gives

€500 to the cause will see their name on the website and on the boat trailer and they will be invited to spend a day with the team.

Mark Heimgartner (bachelor Advanced Technology and future master's student of Mechanical Engineering) has been dedicating all his time to the solar boat since the start of this academic year. "Most people who donate via crowdfunding are family members, friends or acquaintances of the team members," he says. "We got them excited by talking about the project in detail. They are invested and eager to support our efforts. They want the project to be successful."

Having one's name listed on the boat trailer in return for a €100 dona-

tion was a big hit, especially among groups. "If everyone chips in, a student organisation, student residence, fraternity or family can easily raise that amount." To involve investors in the project even after they have made their donation, the Solar Boat team keeps them up to date on the latest developments, e.g. via a newsletter.

Enthusiasm, effort and involvement

Solar Boat Twente did not only recruit investors in the team members' immediate environment. They actually came up with another creative plan. Heimgartner: "We visited the Kottenpark location of The Stedelijk Lyceum Enschede to give a guest lecture to Design and Technology students. Several team



FOR STUDENT TEAM

members brought the boat along and talked about their project. Afterwards, they played a quiz with the children. In return, the school donated €200.

RoboTeam Twente has also set up its own successful crowdfunding initiative. They managed to raise enough money to go to the RoboCup event in Sydney, where the robot soccer world championship will be held. Team member Koen Hertenberg (bachelor Robotics and future master's student of Robotics): "Crowdfunding gave us the assurance that we would make it through the year, financially speaking. More than anything, we needed money to develop and build our robots and ship them to Sydney." Like the Solar Boat team, they mainly received

contributions from people they knew. "We promoted our work heavily on Facebook. In the end, we received a whole lot of small donations and a few sizeable ones. We all chipped in ourselves as well."

Hertenberg believes promotion is key. "Explain why you need help and what the money will be used for. Otherwise, people think you are just asking for money for its own sake. They will only contribute if they understand and support your goal and know what their donation can mean."

It is clear: putting your project on the website and then sitting back is pointless. The success of a crowdfunding campaign depends on the effort and enthusiasm of the team behind it.

Go to steunutwente.nl for more information and an overview of all projects.

U

SUPPORT AND DONATE!
Visit www.utwente.nl/Ufonds



"We want to create an educational system
based around building blocks
that you can put together as you see fit"

A CHALLENGE-BASED ECIU UNIVERSITY

The European Consortium of Innovative Universities (ECIU) will receive €5 million in subsidies from the European Union to innovate higher education in Europe. The UT is an ECIU partner and plays a prominent role in this project. As part of the three-year pilot programme, the ECIU will introduce an innovative educational method in November that is focused more on challenges than on earning a degree. BY Michaela Nesvarova PHOTOGRAPHY Rikkert Harink

UNIVERSITY IN NETFLIX STYLE

"I dream of a university in the style of Netflix, where you can pay your tuition fee and then choose whatever you want from the entire range of courses on offer," says Sander Lotze, head of Internationalisation at the University of Twente and project manager of the "ECIU University." "The idea for this university was first brought up about a year ago during an ECIU board meeting in Kaunas, Lithuania. We were talking about the added value of better collaboration and about the future of education. It is clear that students feel a growing need for more flexibility and that life-long learning should be made easier. Businesses are also looking for different knowledge and skills than what universities currently instil in their graduates. Our whole society faces bigger challenges. Today's generation has to worry about the problems of tomorrow. All in all, the world around us is changing. We therefore asked ourselves how we can respond to that. The typical ECIU answer is based on innovation and close collaboration with regions and businesses. We organised workshops with our stakeholders at each member institution. Together, we developed a vision for the future of education: a challenge-based ECIU University."

What does a "challenge-based university" entail?
"Finding solutions for major social challenges. We are talking about challenge-based education, research and innovation. We would like to create a platform where people can submit their problems, sort of like a database where anyone who wants to (students, businesses, governments and citizens) can sign up and form a team. By definition, these teams will consist of a diverse

group of people with different areas of expertise and backgrounds who are all working on the same problem. Because of this diversity, the participants will naturally have different educational needs as well. Our goal is to offer modular education. We do not strive to be a one-size-fits-all university; instead, we want to create an educational system based around building blocks that you can put together as you see fit."

Should this new type of education replace all existing universities?

"It is not meant to replace traditional universities, but rather serves as an addition that offers room for aspects that have no place in traditional institutions, such as life-long learning. That is a need we struggle to fulfil at the moment. We want to create an environment where you can help businesses solve real problems. That is an entirely different principle than what we are currently doing. At the moment, you know exactly what you have to do to earn your degree. There is precious little freedom to be found. The ECIU wants to facilitate flexible educational programmes: task-based learning. Furthermore, we believe this type of education can keep people connected to their own universities." He continues: "ECIU University is a highly ambitious project. Entrepreneurs and educational experts from all over the world have taken note. I am thrilled about the positive feedback we have received so far and want to invite society, researchers, students and stakeholders to come to us with their real-life challenges, so we can tackle them in the ECIU University," Sander concludes.

The UT Challenge, held on Thursday 20 June, challenges entrepreneurial students to come up with solutions for everyday problems. There were winners in the Ideation, Prototyping and Start-up categories. BY Frederike Krommendijk PHOTOGRAPHY Rikkert Harink

SMART SOLUTIONS FOR EVERYDAY PROBLEMS



Always locatable in water

Team captain Grace Wachter of G-Lake won the Ideation award together with her team. This award is given to an idea that needs to be developed further. In the future, you put the G-Lake on your wrist when you go swimming in open water. If you get in trouble and are at risk of drowning, this "watch" will send a red balloon to the surface so rescue services can easily find your location. The device also sends a signal to your rescuers.

Wachter (a student in the Atlas programme) never expected her and her four team members to win.

"We started this to learn more about entrepreneurship and kept making progress. We were never out to win any awards, but it certainly makes for a wonderful cherry on our cake." Grace's mother was there to watch the team win and she couldn't be prouder. "It was her idea. Twice, she witnessed rescue crews looking for a swimmer who had gone under. She said someone had to come up with a solution for that." Grace's team has now brought that solution a bit closer to market. The €3.000 will be used to develop a prototype of the G-Lake.

Predicting the success of cancer treatments

In the Prototyping category, ECSens was victorious. This start-up developed a nanosensor that only needs a single drop of blood to predict whether a cancer treatment is working. "I believe almost everyone has encountered this disease in their environment. My colleague Dilu Mathew and I are no exceptions. Of course, our personal motivation factors into our work," says team captain Pepijn Beekman.

Step by step, the two learned more about the particles in a patient's blood that are important for making predictions about whether a treatment will be successful or determining how successful it already is. Several academic hospitals have already shown interest in measuring patients' blood samples with their nanosensor, e.g. for people with lung cancer. "We must first develop our prototype further to make it more usable and reliable.

The €4,000 we won will certainly help us do that."



Checking your own eyes at home

Thomas Imhof accepted the award for best start-up on behalf of his team. Thomas (master Business Information Technology) sees this award as "a recognition of the impact that our project has on society." People with cataracts currently have to go to hospital regularly for check-ups. Online Eye Measurements can measure a patient's eyes from the comfort of their own home using a smartphone. The results are sent to the ophthalmologist via email, so they can monitor the process. This reduces the workload of outpatient clinics and saves the (often elderly) patients a lot of travel and hassle. "Consumers are already using the online eye measurements and the medical sector has also shown interest."

Imhof hopes that the online measurements can also be used for the treatment of other eye diseases, such as glaucoma and macular degeneration, and for multiple target groups, including children. The €5,000 in prize money will be used to cover some of the costs of the project.

Other winners:
Plaex (Audience Award),
Accelent Resonant Accelerometers (ASML Makers Award + Bosch Thermo Techniek prize) and Oswald Labs (Volker Wessels Telecom prize).

ETHICS LAUNDERING

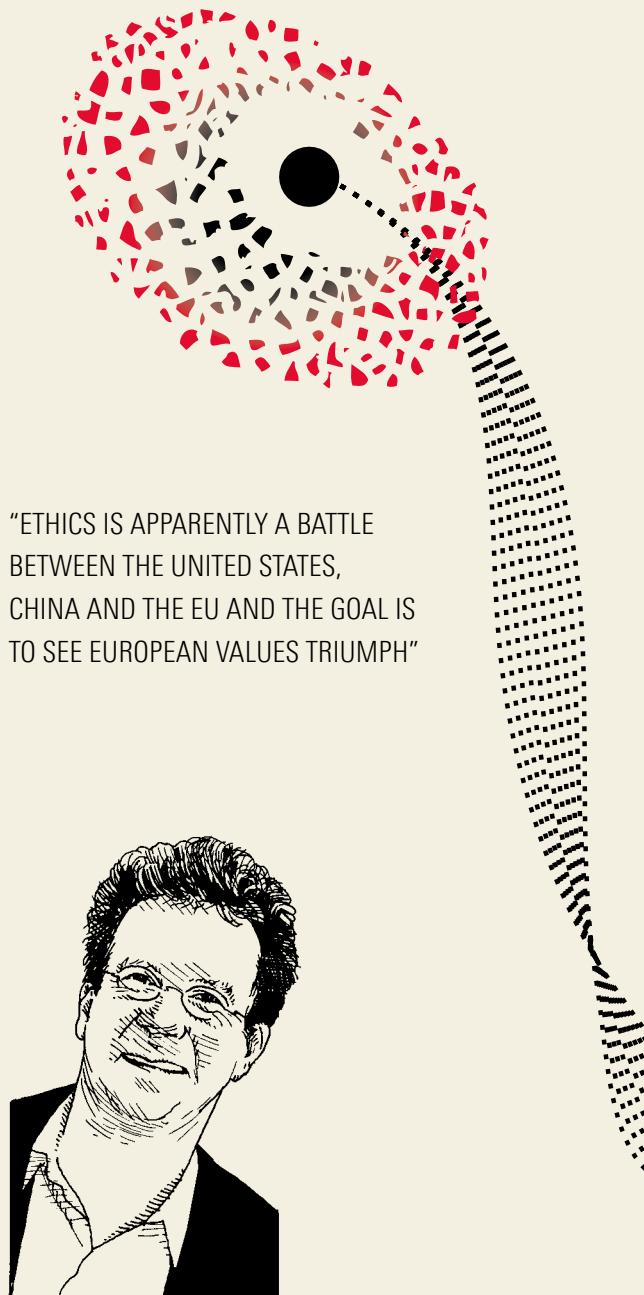
Several weeks ago, the European Union published its long-awaited ethical guidelines for artificial intelligence (AI). A group of fifty-two experts developed an ethical framework centred on the concept of “trustworthy AI.” The committee advocates the development of artificial intelligence that is worthy of our trust, because it is based on such values as explainability, transparency and respect for autonomy and wellbeing. However, immediately after the presentation of the guidelines, the group of experts had its own trustworthiness called into question. Thomas Metzinger, professor of Theoretical Philosophy at the University of Mainz and a member of the group, immediately opened fire on his contribution.

In an article submitted to *Der Tagesspiegel*, Metzinger called the guidelines “a means for ethics laundering, developed in the EU.” He complained about the fact that the group of experts only included four ethicists and that the guidelines are vague and short-sighted. His job had been to draw up so-called “red lines”: hard, non-negotiable limits that have to be adhered to when developing applications such as autonomous lethal weaponry or uncontrollable systems. However, while working on that, he was told that the group wanted to develop a “positive approach” and that a terminology of hard limits would be incompatible with that. That upset him greatly. The industry has used the committee as a means to justify its own unethical practices.

Metzinger’s objections might sound like a heroic fight for a good cause,

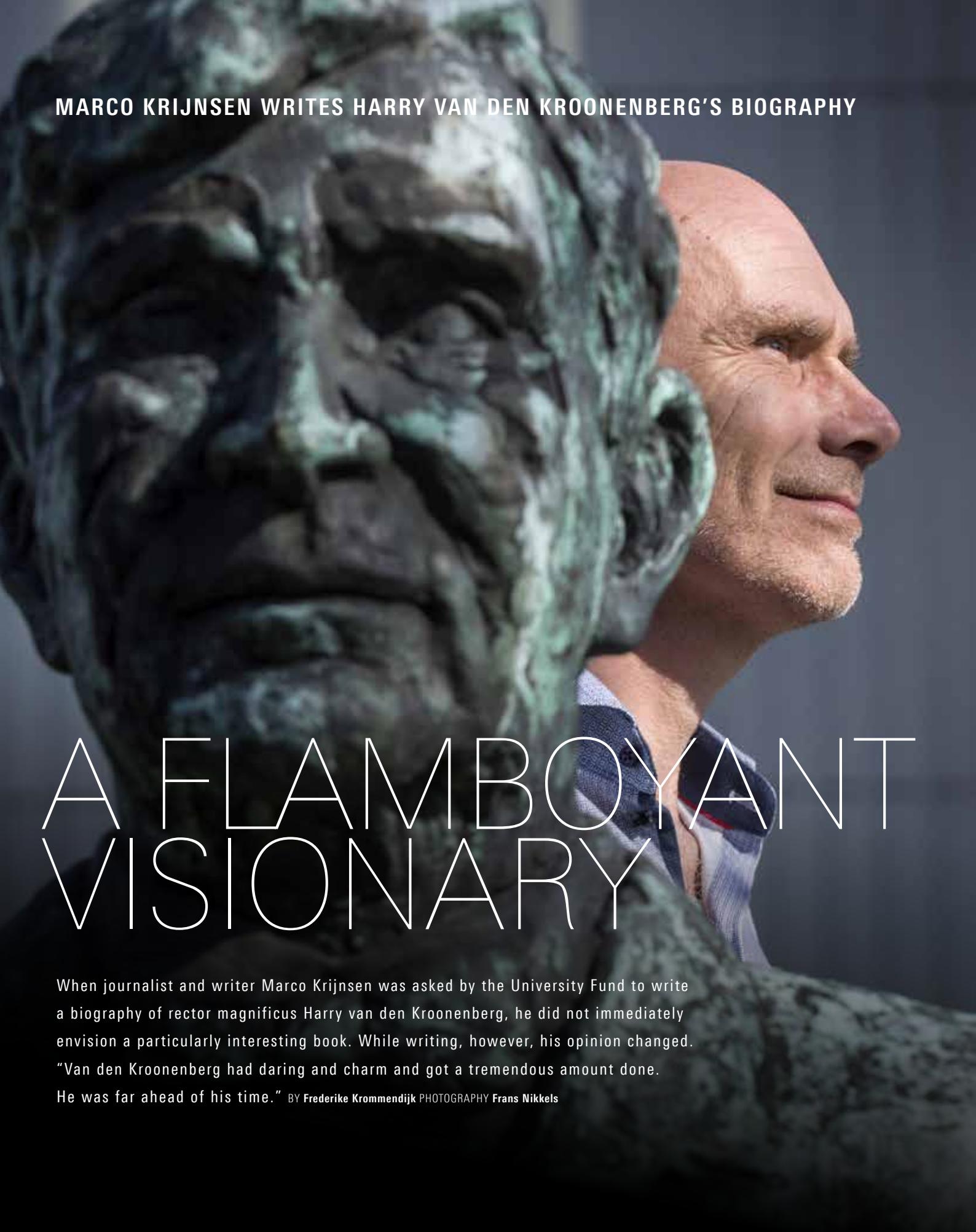
but they give us the wrong idea. With his talk of hard limits, he confuses ethical guidelines and binding legislation, thereby disregarding the importance of active ethical reflection by technologists themselves. He paints a severely outdated picture of ethics as an exalted guardian against an ethics-less world of technology and capital. In reality, the field of technology ethics is making great progress towards unification with the technological practice. Instead of giving yourself up to industry beforehand, it is important to be able to ask the right questions at the right time, so you can make a difference and have a real impact. If all you do is search for “red lines,” you will find yourself out of touch with current developments and miss out on the opportunity to put a positive spin on things.

Even more worrisome to me is the European chauvinism that is evident from Metzinger’s arguments. He opens his article with the statement that, despite everything, the guidelines are “the best in the world” and that “the United States and China have nothing that can compare.” At the end of the piece, he praises the fact that the guidelines are “steeped in European values.” For him, ethics is apparently a battle between the United States, China and the EU and the goal is to see European values triumph. With this belief, Metzinger disregards the necessity of developing a global, widely supported and inclusive ethical framework. Unintentionally and regrettably, the word “laundering” is a more apt description of his own approach than he might suspect. •



“ETHICS IS APPARENTLY A BATTLE BETWEEN THE UNITED STATES, CHINA AND THE EU AND THE GOAL IS TO SEE EUROPEAN VALUES TRIUMPH”

PROF. DR. ENGR. P.P.C. (PETER-PAUL) VERBEEK (1970) IS PROFESSOR OF PHILOSOPHY OF MAN AND TECHNOLOGY AND UNIVERSITY PROFESSOR AT THE UNIVERSITY OF TWENTE.



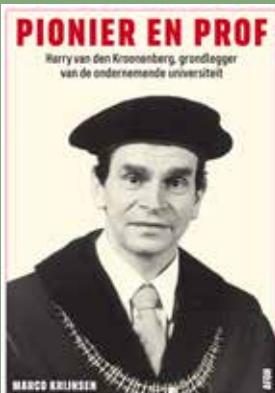
MARCO KRIJNSSEN WRITES HARRY VAN DEN KROONENBERG'S BIOGRAPHY

A FLAMBOYANT VISIONARY

When journalist and writer Marco Krijnsen was asked by the University Fund to write a biography of rector magnificus Harry van den Kroonenberg, he did not immediately envision a particularly interesting book. While writing, however, his opinion changed. "Van den Kroonenberg had daring and charm and got a tremendous amount done.

He was far ahead of his time."

BY Frederike Krommendijk PHOTOGRAPHY Frans Nikkels



PIONEER AND PROF

Prof.dr.ir. Harry van den Kroonenberg (1933-1996) was rector magnificus at the University of Twente from 1979 to 1982 and from 1985 to 1988. After that, he became the director of ECN in Petten, although he also maintained a part-time position as a professor. He died at the age of 63 while out running.

Van den Kroonenberg was the spiritual father of the 'entrepreneurial university': a university with close ties to society and with a strong entrepreneurial spirit. That philosophy led to such concrete initiatives as the Technology Transfer Point (1979), the BTC (1982) and the TOP programme for young (student) entrepreneurs (1985). The University's ties to the world of business became considerably closer during his rectorship and the UT is still known to this day for the many spin-off businesses it brings forth. His biography, entitled *Pioneer and prof*, was presented in the U Parkhotel on 16 May. The book (160 p.) costs €24.50 and can be ordered via afdh.nl or the bookstore.

The writer knew little about Harry van den Kroonenberg at first. "He was a bit better known than the people that came before and after him and he has an award named after him. When I began to go over the archive, I became increasingly fascinated. He was a visionary in more ways than one."

Van den Kroonenberg is generally seen as the spiritual father of the "entrepreneurial university." "He bridged the gap between society and the University. In the 1970s, that was unusual. The focus was on fundamental research. With his approach, he made the University more accessible, brought it closer to the people and initiated developments that are commonplace today, but were revolutionary at the time."

Not everyone was in favour of Van den Kroonenberg's approach. "There was a small group of fundamental researchers he had problems with. The Ministry, which was still based in Zoetermeer at the time, viewed the goings on in Enschede with suspicion. Nevertheless, he pushed on with tremendous energy and at a truly impressive pace."

The desire to bring the University closer to society also had a practical component: subsidies were shrinking and by collaborating with busi-

nesses, new cash flows became accessible. "Some feared he would sell out science to commerce. He was not opposed to fundamental research at all, but he thought the practical applications were more important. As he put it: 'The aeroplane was developed before the science of aerodynamics was perfected.'

In his biography, Krijnsen paints a picture of an amiable original thinker who moved mountains with his spirit. He was a hard worker, too: he got up every morning at six, went for a run and then worked from 7:30 AM until 10 PM. "Eight hours of work for the UT, eight hours of external work – that was a much-heard phrase. Even though some struggled to accept the course he charted, all twenty-five people I interviewed told me he was a sympathetic man with an enormous drive."

He was never one for chitchat or socialising. The business lunch with entrepreneurs was gone in five minutes and then it was time to get down to business. During family gatherings, he dreaded those endless meals as well. "He thought it was a waste of time. His children mainly remember him working at the dinner table. The TV, which was bought to watch the Moon landing, was banished to the bedroom. Yet

even they say: he was always there when you needed him."

Another theme with which Van den Kroonenberg was far ahead of his time: sustainable energy. "Even back in 1976, his designs included a focus on energy, resources and the environment. He was a strong proponent of solar energy at a time when hardly anyone was working on that yet. During his time at ECN in Petten, he brought over an expert from Amsterdam to develop this technology, thereby going against the will of the Supervisory Board. All this happened in a time when the minister of Economic Affairs dismissed solar energy, saying there was not enough sunshine in our country to make it worthwhile."

"Van den Kroonenberg was far ahead of his time"

Krijnsen is now convinced that the biography makes for an interesting read. "The book is not just about the person, but also paints a picture of how the University and our society have developed since 1979. I have come to admire the person as well. He died young, yet he lived his life to the fullest. He got more done in a few short years than others could ever hope to do in a hundred years or more."

Name **Jan-Willem van 't Klooster**
Age **34**
Position **Managing Director of the BMS Lab**
Education **Telematics (MSc) Science education and communication (teacher training computer science) and Computer Science (PhD, University of Twente)**
The ExperiVan of the Behavioural Management & Social sciences (BMS) faculty
Lab



"To conduct proper research,
you need a realistic
research environment"

BY Marco Krijnsen
PHOTOGRAPHY Annabel Journing

The lab of the University of Twente's social scientists has hit the road. The ExperiVan, the brand-new research van packed full of measurement and observation equipment, can be seen in various locations all over the country, from prisons to festivals.

"To conduct proper research, you need a realistic research environment," says Managing Director Jan-Willem van 't Klooster. "That is not always available on the University's campus. Furthermore, some subjects are not able to come to the lab in person. Think of e.g. the elderly living in healthcare facilities or the inmates of a prison. That is why we go to them instead."

The mobile BMS Lab boasts research equipment for physiological measurements, e.g. a subject's heartrate, interventions such as VR goggles, eye tracking and audio-visual observations with which to analyse a coaching interview or group dynamics. This allows for on-site research, either on board the van itself or in the airdome that can be set up outside this unique vehicle.

The mobile lab offers a ton of added value for business administrators, public administrators, psychologists, criminologists and educational scientists. The Psychology of Conflict Risk & Safety department will be conducting research among young detainees. This is as simple as driving the van to the prison's front gate. Furthermore, the mobile lab is a great promotional tool for the social sciences in Twente, Van 't Klooster believes. "We can show young people what we have to offer in terms of research. That is why we regularly visit high schools and festivals such as Zwarde Cross and Mañana Mañana. It is a great way to promote the UT."

AIRFI, SUPPLIER OF CROQUETTE ORDER SYSTEMS TO IN-FLIGHT ENTERTAINMENT

NOT EVEN THE



"You have to fight hard
for your success and if you see
an opportunity, seize it
and never let go"

The entrepreneurial university fit Job Heimerikx like a glove. As a Business Administration student, he already had a host of businesses. Today, he is active all over the world with AirFi, a company that provides in-flight entertainment and portable cash register systems to more than eighty airlines and train and bus operators. "As a global organisation, you have to be open to other cultures." BY Frederike Krommendijk PHOTOGRAPHY AirFi

SKY IS THE LIMIT

As a child, he sold walnuts in the street. He was taught from an early age that other cultures are an enrichment. "My mother taught Dutch to newcomers and my parents have always loved to travel. After the UT, I attended the INSEAD business school in France to obtain my MBA. Even if I didn't have any cultural sensibilities before, those were firmly ingrained in my character there."

While studying Business Administration at the UT, Heimerikx became enamoured with the character of the entrepreneurial university. Doing business runs in his blood. "I lived in a student residence on the Pijlhovestraat in Enschede. Together with my fellow students, we set up the Pijlhoeve Group. We took products to market for our clients and set up nearly a dozen businesses in various sectors, from pharma to civil engineering and education. I also had a job as a technician at the theatre in Hengelo. I was one of the first students with a loan and a fine. I did not do very well during the day because of the many late nights I had. Back then, it was still possible to take seven years to complete your studies. Nevertheless, you learn so much from having a job alongside your studies that I would recommend it to all students."

Even during his spare time, he loved a challenge. With student sailing club Euros, he brought the twenty-five-metre-long "klipperaak" De Ebenhaëzer to campus in 1998. That triumph can be seen in old photographs, which show Job alongside his current partner. After his student years, Heimerikx continued his entrepreneurial practices with his housemates. "You should never do business with your friends," people told me. We thought that if we could eat each other's cheese from the fridge without getting into an argument, we would be fine."

Wat appeals most to him about the world of business – then and now? "Creating a proposition, a unique product or service and convincing others that they cannot live without it. I still love that: we can launch an idea and people end up feeling like it was their own idea all along. One of the first things we did was develop an app that let you create your own personal postcards via MMS. While I was at the printer in Enschede, I saw all kinds of pictures from people I knew, although they had no idea we were behind the concept." Another such novelty: Cycleon, a logistical returns company for electronics and toners. He left that organisation a long time

ago, yet he still takes pride in the fact that one of his ideas has been turned into a successful business.

The Pijlhoeve Group was disbanded in 2011 and its members went their own way. "They all achieved their dreams, I love that." Heimerikx started AirFi, a company that initially only offered a cash register system on a tablet, which allowed cabin crews to complete transactions in mid-air without an internet connection. It was not an instant hit – on the contrary. "I had to borrow money, it was a struggle. One day, an airline came to us with a problem. They sold croquettes on board in a very old-school manner. The cabin crew would take orders and literally write them down on napkins. Because they started at the front and rear of the plane, the passengers in the middle were always left in the cold. Wouldn't it be great if people could place their own orders? A kind of shopping system, in other words, that would allow people to log in and order what they want until a product was sold out. That is how it started. Later, we expanded that same system with digital newspapers – eliminating fifty kilograms' worth of paper on board – as well as movies; in short, all the in-flight entertainment you need."



JOB HEIMERIKX

- 1992-1999 Studied Business Administration at the University of Twente
- 1998 Brought the thirty-metre-long "klipperaak" De Ebenhaëzer to campus with the student sailing club Euros
- 2000 Co-founder of the Pijlhoede Group (Stuurboord BV), brought various businesses and products to market with four housemates
- 2011 Founded AirFi.aero; initially a cash-register system, but now a complete in-flight entertainment system with more than eighty clients in forty-six countries all over the world.



When Estonian Air was the first to launch the complete system in 2015, things happened fast. In just four years, AirFi conquered an enormous market: 82 airline companies all over the world, including all Dutch airlines and KLM's 747 jets. Today, AirFi employs 130 people, including franchisees and sales.

"The business began to grow exponentially. People were lining up for our product. With our own production facility in Zwijndrecht, we can fill orders quickly. We have since opened new locations in The Hague, Singapore and Bangalore, India." Despite the rough start, it became a success story in the end. "I always say getting started is like eating glass. You have to fight hard for your success and if you see an opportunity, seize it and never let go. The aviation sector is a hard market to penetrate. However, once you have one satisfied customer, more will surely follow."

With his global scope, Heimerikx has also developed an aversion to the rising nationalism and protectionism. "From a business perspective, I would be severely limiting myself if I never looked beyond our national borders. My client list would include KLM, Transavia, Corendon and TUI, and that would be it. However, if you

"I make absolutely sure that applicants do not discriminate based on gender, religion or skin colour. That is a big issue for me"

are open to other cultures, there is so much you can learn from them. We have seventeen nationalities at AirFi. I make absolutely sure that applicants do not discriminate based on gender, religion or skin colour. That is a big issue for me. We employ Muslims and Christians, gays and straight people. There are Muslims who work on Sundays because they want to go to their mosque on Fridays. That's fine. It's even beneficial for our Arab clients, because they would not be able to reach anyone on Sundays otherwise. You can be who you want to be here, as long as you do not provoke others. I take pride in that."

Another wonderful aspect of his success is that he gets to watch people grow all over the world. "I once hired an Indian programmer who walked in wearing clothes full of holes and slippers. He completed a couple of training courses and left us after a few years for a great position at another company. I could mope about that, but I think it is wonderful that I got to be a part of

someone's personal development." He couldn't be happier, then – or is he feeling restless again and getting ready for the next challenge? Heimerikx laughs. "It is nice to take it easy for once. We are still growing, mind you. My dad called me recently: he was on a plane that had a system just like ours. I told him it was ours. I feel quite proud at times like that." Is the sky the limit? "Not for us, no. We are currently active in forty-six countries; the world is my living room. As long as I have enough drive to preach about this product to the world, I am fine where I am."

He maintained a close connection to the University of Twente. The Executive Board hired him regularly, he worked for various funds and helped recruit enough students for the first year of the Technical Medicine programme. "The strong focus on entrepreneurship during my studies worked out very well for me. That is what I learned from most of all – far more than if I had spent all my time in the lecture halls."

"Risk meets resilience for a sustainable future." That is the theme of the Risk & Resilience Festival that will be held at the UT on Thursday 7 November. During various sessions, lecturers and speakers will engage with participants to discuss how risk and resilience reinforce each other and contribute to our ability to deal with our uncertain and unpredictable future. TEXT & PHOTOGRAPHY PLD

RISK & RESILIENCE FESTIVAL 2019



"Familiar systems are shifting, which calls for resilience"

Globalisation, digitisation, climate change and disruptive technology and innovations: we live in an age of major upheaval that is rocking our society to its core. The energy transition, the extramuralisation of the health-care and shifts in the agricultural sector are just a few examples of how our current society is fundamentally changing in countless areas, says Theo Toonen, dean at the University of Twente and involved in the substantiation of the Risk & Resilience Festival. "We face disruptive developments, some of which we welcome, but others we do not. As a society, we have to find a way to deal with them all the same. Familiar systems are shifting, which can make us feel as if our very foundations are crumbling. That is why we see innovation and progress alongside resistance and polarisation."

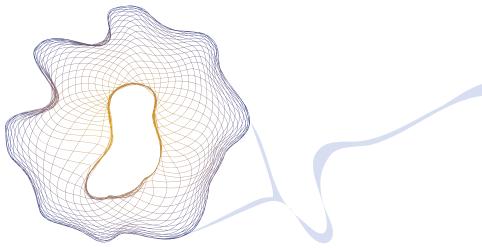
Toonen uses the energy transition as an example: "In the past, the energy market was made up of a few near-monopolistic energy providers with vast infrastructures. Today, more and more people are their own energy provider. We see complex, dynamic smart grids: interconnected systems, distributed networks of local energy corporations that are in part literally dependent on the unreliable presence of sun and wind and which are connected together to form international supergrids," Toonen explains. "This is an essential and wonderful development in some ways, but it also leads to new complexities, unpredictability and risks." He continues: "The result is that the risk calculation methods and strategies of old have to be updated or replaced. Risk management in the classic sense of the word is based on a given situation, goals and conditions. Managers operate from the perspective of efficiency and effectiveness. These are important values, but in a constantly and rapidly changing world, managing crises and risks – no matter how important – is no longer enough. This day and age calls for resilience, adaptability and the institutional and personal flexibility to deal with unpredictable factors."

The Risk & Resilience Festival, which once began its life as an information gathering for UT students and alumni, has since grown into a sizable annual festival. "Everyone knows Twente is the place to be for this. Governments, employees of safety regions, scientists and businesses can all learn or contribute something from their own perspective. Last year's iteration had 800 visitors. I expect to top that this year," Toonen says.



The Risk & Resilience Festival will be held on the UT campus on Thursday 7 November. If you want to attend, make use of our early-bird discount and go to utwente.nl/risk-festival.

IN BRIEF



STUDENT TEAMS READY TO RACE

The Eclipse-GP, the new and lightning-fast electric motorbike developed by the Electric Superbike Twente team, is ready to hit the racetrack with race driver Jorg Hamber. Green Team Twente's newest and extremely energy-efficient hydrogen-powered car will take part in the Shell Eco-marathon. Out on the water, there is no reason to slow down either – at least not if you ask the Solar Boat Team: their new Blue Manta solar boat is expected to do well in Monaco. Then there is the solar-powered car: the eighth iteration from Twente, the RED E, is smaller than ever before and ready to face the competition in the Australian outback. Australia is also the desti-

nation of the robot soccer team RoboTeam Twente: in the summer, the robot soccer world championship will be held in Sydney. Aerobatic Tech Team Twente (A3T) is developing drones to take part in an Unmanned Aircraft System (UAS) challenge. They want to show what drones can do during a humanitarian mission. The UT's newest team is going to outer space. Among other things, Space Society Twente wants to develop the Twente-Sat-1, a compact satellite. The UT's seven official student teams are all inspired by the belief that through competition with other teams from all over the world, technology is taken to the next level.



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DAVE BLANK'S DEPARTURE

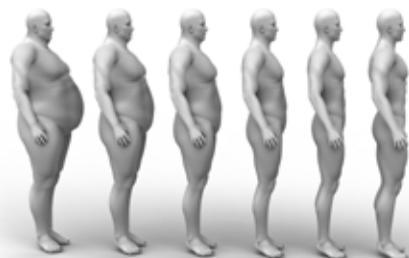
After forty years, university professor Dave Blank's time is up. The top scientist, former scientific director of MESA+ and Chief Scientific Ambassador retired on 25 May.

As department technician, he built test setups "that bordered on the impossible." Dave Blank never stopped experimenting, not even when he got the opportunity to obtain his PhD as an engineer. In the nineties, his main claim to fame was superconductivity. Later, he became the figure head of nanotechnology in the Netherlands. He worked as scientific director of the MESA+ Institute for Nanotechnology and wrote the "strategic research agenda nanotechnology," among other things.

Dave Blank won many awards throughout his career. For example, he is a Simon Stevin Meester and won the FOM Valorisation Prize together with colleague Guus Rijnders. During the opening of the new NanoLab on campus by Willem-Alexander (still a prince at the time), Blank was made a Knight in the Order of the Dutch Lion.

COLLABORATION WITH SIEMENS

The Technical Medical Centre (TechMed Centre), which will officially inhabit its new building in the autumn, will collaborate with Siemens Healthineers to develop less invasive video- and robot-controlled methods for precision surgery. To realise this, the partners developed a research and education programme together. Siemens will also provide a robot-controlled imaging system for the UT's training OR and the TechMed Centre will get its own MRI scanner. TechMed will be moving into the former Technohal in the coming months.



OBESITY

By combining satellite data, geo-information systems and GPS – together known as “3S” – it is possible to identify environments that present an increased risk of obesity, which is a growing health problem. How does our environment affect our chances of developing obesity? Does our environment inspire us to exercise? Are healthy foods as easy to come by as junk

food? What impact do the climate and temperature have? By utilising 3S data to assess the risk of obesity, it is also possible to develop interventions. Within a single city, different neighbourhoods can be compared to determine which preventative measures do (not) work. Combining data offers major potential, says researcher Peng Jia of the UT's ITC faculty.

GARMENTS THAT TOUCH YOU

A sweater that touches you briefly and pushes you to take action with “active yarn:” yarn that can contract like a muscle and is incorporated into the fabric. Putting sensors on an item of clothing is one thing, but what if we can make the garments themselves active? That is the idea behind the new WEAVING project: Wearable Electroactive Fabrics Integrated in Garments. The applications of this material include tactile navigation for

the visually impaired and garments that can help the wearer learn new movements in sports or at work. The researchers are also exploring applications in gaming and entertainment. The tactile yarn is being developed as part of a cooperative alliance between various European universities and businesses. Angelika Mader of the UT's Human Media Interaction department serves as the project coordinator.



More information about these items can be found at www.utwente.nl/en

CANON OF THE UNI- VERSITY OF TWENTE

What does the Tower of Drienerlo have in common with the voice of Kermit the Frog and Sesame Street's Ernie, TV personality Sjef van Oekel and the legendary radio show Ronfлонfлон? Go to www.utwente.nl/canon-van-de-ut for the answer, along with even more remarkable stories about the events, notable persons and characteristics that made the UT into the entrepreneurial university it is today!



ANK BIJLEVELD
2017



BONITA AVENUE
2010



THE FIRE IN THE TW/RC
BUILDING
2002



THE TOWER OF DRIENERLO
1979



THE BATAVIERENRACE
1974

ALUMNI TALKS



The annual alumni event "Alumni Talks – see the future" will be held on Friday 4 October this year. We will explore what the future holds for the areas of expertise of four alumni. Three speakers have already been locked in: Tony Agotha (BSK '95), advisor to Frans Timmermans, the first vice chairman





4 OCTOBER 2019



of the European Commission, Giels Brouwer, founder and Chief Information Officer at UT start-up SciSports and Loes Segerink, biomedical technologist at the UT. Now's the time to put 'Alumni Talks' on your agenda! **For more information, visit utwente.nl/alumni-talks**

TWENTE ALUMNI LECTURES THROUGHOUT THE COUNTRY

All over the country, seven UT researchers shared the latest developments in their field with a total of 150 alumni during the Twente Alumni Lectures. Afterwards, there were often valuable dialogues between the theoretical researchers and the practically minded alumni,

such as that one time with UT researcher Jair Santana in Utrecht. He got involved in an energetic discussion with the alumni about DDoS attacks. We can look back on these lectures with pride. Here's to the next edition!

UT ALUMNI ON THE MOVE

- **Rogier Ikink (MSc COM '11)** began working as Vice President Financial Crime Advisory at NatWest Markets in April 2019. Before this, he worked as consultant at Goldman Sachs and manager at EY, among other things.
- Since March 2019, **Niek Tax (MSc CS'14)** works as Data Scientist at Booking.com. Prior to this, he obtained his PhD with research that focused on the analysis of sequence-based data.
- After working in various other positions in Germany and Switzerland, **Marc Lauffs (MSc PSY '12)** works as User Experience Researcher at Google in Switzerland per February 2019.
- **Timon Sibma (MSc HS '08)** works as Advisor International Affairs at Zorginstituut Nederland since March 2019. Before this, he worked at PART zorg for more than five years, where he held a number of positions, including that of Managing Consultant.
- Since April 2019, **Pim de Kok (MSc IDE'11)** works as Manager Technical Support at Xsens. Before this, he worked as Product Manager at Tecnotion – The Linear Motor Company.
- **Werner Wessels (MSc AP'12, PhD'16)** obtained both his master's degree and a PhD from the UT. After that, he continued his research career as R&D engineer at TKF (BV Twentsche Kabelfabriek). Since April 2019, he works as R&D Engineer at Solmates.
- Per February 2019, **Yiwen Sun (MSc GEO'11, PhD'16)** works as Data Scientist at Strukton Rail. Before this, she continued her PhD research as a researcher with the ITC faculty.
- After several jobs in the financial sector, **Pankaj Chauhan (MSc AM'09)** began working as Quantitative Risk Modeller at UBS Switzerland in March 2019.
- **Wim Korevaar (MSc EE'10, PhD'16)** accepted a job as Digital Communications Scientist at TNO in April 2019. While completing his studies and obtaining his PhD, Wim founded PrinterABC and DOT.world.
- Since April 2019, **Maarten Witte (ME'96)** works as COO at Polaroid Originals. Before this, he worked as COO at e.g. Bugaboo and Stork Fokker AESP and was responsible for Supply Chain Planning at Heineken and Bosal.
- **Jantine Koebrugge (MSc AM'11)** works as Senior Policy Advisor at the Ministry of Infrastructure and Water Management since April 2019. Before this, she spent seven years as a Policy Advisor in various departments of De Nederlandsche Bank.
- After completing the Public Administration bachelor's programme, **Barry Jongkees (BSc PA'12)** earned a master's degree at the London School of Economics and Political Science. Since March 2019, he works as Senior Special Investigator – Wholesale Banking at ING.
- **Manja Thiry (MSc IEM'97)** works as Director Business Development at Eneco since February 2019. Before this, she worked as Director Real Estate & Procurement at Pon Holdings BV and Nike (EMEA region), among other things, and took a sabbatical to sail across the Atlantic Ocean.

Do you want to invite UT alumni to your company or is there a company where you have you always wanted to visit?

Then let us know via alumni@utwente.nl

With 49,000 alumni spread all over the world, there is always an entrance!

COLOPHON ALUMNI NEWS

Questions, comments and suggestions:
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Tel. +31 (053) 489 2104
Twitter: @alumniUTwente

www.utwente.nl/alumni
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ANNUAL CAMPAIGN 2019: YOUR DONATION COUNTS EVERY YEAR

More than **350** alumni, (former) staff members and relations of the University have already donated to one of the four projects of our annual campaign 2019. Can we count on you to make a contribution as well?

Because of the many donations we received in 2018, the Pre-U Leerlingenlab received €5,000 to give more elementary school children in the region a chance to come into contact with technology and science at an early age. The impact of that contribution is enormous: one hundred extra children from six schools in Hengelo, Enschede and Borne took part in the Leerlingenlab. On behalf of all those children, thank you very much!

This year, we are recruiting donations for Naaldvrij Prikken, Solar Boat Twente, the Kipaji Scholarship Fund and our academic heritage: the Collection of Historical Study Materials. For more information and to donate, go to

WWW.STEUNUTWENTE.NL

You can also donate via Tikkie,
simply by scanning the code.



TIKKIE



INTER-ACTIEF STUDYTOUR SHIFT

In total, thirty-five Computer Science and Business & IT students visited the metropolises of Seoul and Busan in Korea and Osaka, Kyoto and Tokyo in Japan to explore the theme of cyber-physical infrastructure. They researched the use of cyber-physical systems in traditional infrastructure, such as the High-Speed Shinkansen railways in

Japan and in the development of 5G networks. They visited Hyundai, the Korea Internet Neutral eXchange (KINX), LPixel and the University of Tokyo. They also went to the Korean demilitarised zone and visited a Buddhist temple to experience a day in the life of a Buddhist monk.

DUTCH STUDENT CHAMPIONSHIP INDOOR ATHLETICS

On 2 March, the Drienerlose Atletiek Vereniging Kronos hosted the Dutch Student Championship Indoor Athletics, not in Enschede but in Apeldoorn. In total, 439 athletes took part in the competition, one and a half times as many as last year, including around forty UT students. Seventeen-time Dutch champion Sanne Wolters-Verstegen ran her 800-metre race below the European Championship time.



DONATIONS WITH TAX BENEFITS

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Please contact Josine via josine.meerburg@utwente.nl



AKYLA WINS THE VAN DEN KROONENBERG AWARD

The founders of Akyla, UT alumni Martin Schievink and Bart van Borssum Waalkes, won the Van den Kroonenberg Award this year. Akyla, the developer of the portal and app for staffing and payrolling, also won the FD Gazellen Award in 2017 and 2018.

In 1999, Martin and Bart launched a student company with four students during their Computer Science studies. After their foundation course, they took part in the practical entrepreneurship course. They wanted to make the most of their time at the UT and were inspired and facilitated by the entrepreneurial university. The environment – the campus with its high-speed internet connection – facilitated their activities as well. Twente years later, that same student company has grown into a business with twenty-five employees.

"It is amazing to win the Van den Kroonenberg Award in the same year that we celebrate Akyla's twentieth anniversary. This serves as a confirmation that our team is on the right path as a result of our hard work and our drive to develop ourselves further. Without our excellent team, we would not be good entrepreneurs," says Schievink. Both men acknowledge the important role that the UT played in their development. Partly as a result of their studies, an entrepreneurship course, the climate at the entrepreneurial university and the available facilities on campus, they are now running a successful business. Akyla helps the staffing sector with the correct processing of e.g. timecards, holidays and overtime. The company's main products are e-UUR (a portal and an app) for registering and processing hours worked and the Xplican product, a mechanism with which collective labour agreement requirements can be translated into the design of systems.

'INSPIRE TO IMPROVE'

In late February, the annual symposium of the Stress study association was held in the Grolsch Veste. The theme was "Inspire to Improve." There were lectures from head sponsor Cape Groep, Patrick Davidson, Ron Augustus (SMS&P director at Microsoft Netherlands), Nick van Keulen (General Manager Future Supply Chains at Shell) and entrepreneur Taco Dijk. Students got the opportunity to network with the thirteen organisations in attendance.



JOEKE NOLLET WINS THE MARINA VAN DAMME SCHOLARSHIP

This year's Marina van Damme Scholarship for talented and ambitious female alumni was given to Joeke Nollet (TG'10). The judges chose her from among sixteen candidates.

Technical Medicine alumna Joeke Nollet works as a researcher and technical physician in the intensive care department of the RadboudUMC. She plans to use the scholarship (€9,000) to e.g. set up a fellowship with Flinders University in Australia to improve the care for patients with a swallowing disorder. She also wants to use the money to enrol in a programme about the implementation of innovations in the healthcare sector. Joeke's goal is to become an expert in the field of pharyngeal HRIM. She is the first to use this technique and wants to make it more widely available for Dutch patients.

Joeke started the Technical Medicine bachelor's programme in 2007 and completed it in 2010. After earning her master's degree in Medical Signalling with distinction at the UT, she completed a four-year master's programme in Utrecht to become a physician and clinical researcher. She completed this programme in 2018, once again with distinction. Since September of 2018, Joeke works as a researcher and technical physician in the intensive care department of the RadboudUMC. The Marina van Damme Scholarship was given out for the seventeenth time this year by the Twente University Fund, made possible by an endowment from Mrs dr.ir. M.A. van Damme-Van Weele. In 1965, she was the first person to obtain a doctoral degree from the former Twente Technical University of Applied Sciences.

NEGOTIATION PROJECT TWENTE

In March, three UT students of the Negotiation Project Twente took part in The Negotiation Challenge (TNC) in Kyoto, Japan. This annual negotiation tournament has master's students and professionals from all over the world get together to test their negotiation skills. Eighteen international teams took part in the competition. After four qualification rounds, the UT team earned second place. This participation was made possible by the University Fund Twente and the Peter Riezebos Fund.



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More information

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Smart solutions to everyday problems. During the Entrepreneurial Day on Thursday 20 June, entrepreneurial students proved that the UT is hard at work to find those. It was a festive day, because the winners of the UT Challenge were announced and the Harry van den Kroonenberg Award and the Marina van Damme scholarship were given out.

What did the attendees think of the event? BY Frederike Krommendijk

PHOTOGRAPHY Rikkert Harink



JURGEN VAN KREIJ OF INNOVADIS WON THE HARRY VAN DEN KROONENBERG AWARD IN 2000 WITH B-WARE, HIS PREVIOUS BUSINESS.

"It has been almost nineteen years since I won that award, so I cannot recall exactly what it felt like at the time. I know it came as a surprise, though. I had some meetings, but only realised later what those were actually for. With Innovadis, I am still involved in technologically challenging projects such as the smart highway and the development of an app to measure cracks in concrete. I was and still am driven by my desire to have my work be socially relevant. I see that same passion in today's finalists. My advice? Do not go for the big bucks, but follow your heart. If your idea is good and you support it wholeheartedly, a successful business will surely follow."

ANNERIE BEMTHUIS, DIRECTOR OF THE INDUSTRIËLE KRING TWENTE AND MEMBER OF THE JURY FOR THE MARINA VAN DAMME SCHOLARSHIP.

"At IKT, we want to establish connections between the worlds of education and business. The Entrepreneurial Day is perfect for that, of course. As a member of the jury for the Van Damme Scholarship, I look for ideas that suit the goal of the scholarship, which is to put the University on the map, but I also consider their added value for the region of Twente."

I am surprised by what people have come up with. The determination with which students work on their projects and their expertise in their chosen field are very inspiring. Twente can truly benefit from their ambition. We must do what we can to retain these talents."

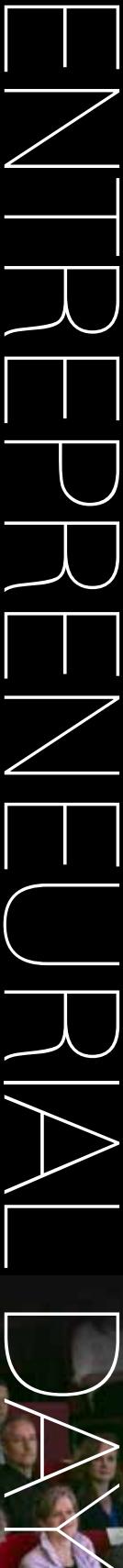




AYA VAN DEN KROONENBERG, DAUGHTER OF HARRY VAN DEN KROONENBERG (RECTOR MAGNIFICUS OF THE UNIVERSITY OF TWENTE FROM 1979 TO 1982 AND FROM 1985 TO 1988) AND NAME GIVER OF THE HARRY VAN DEN KROONENBERG AWARD.

"My father's biography was recently published. That is an emotional situation, of course, because he passed away at such a young age, but my feelings are mostly positive. My father had an optimistic and entrepreneurial spirit and he was the founder of the entrepreneurial university. As his family, we think it is amazing that awards bearing his name are given out each year to continue his legacy. My mother always tries to attend these events, but she was not able to make it this year."

I studied at the UT myself, Mechanical Engineering. My father did not go easy on me at all; in fact, he was even stricter than usual. I also teach workshops to show students and professors how to acquire subsidies. I came here with my younger sister today. This award is a wonderful tribute to my father."



WILMA VAN INGEN, CHAIRWOMAN OF THE UNIVERSITY FUND. SHE GAVE OUT THE HARRY VAN DEN KROONENBERG AWARD AND THE VAN DAMME SCHOLARSHIP.

"The winners of these prizes have to be doing something that has social relevance. That is what the judges look for. Their ideas have to be put to good use. Giving out these prizes is a great way to show off the wonderful ideas people come up with and it also serves to strengthen the ties between the UT and the world of business. Luckily, the two are quite close as it is, but it cannot hurt to reaffirm that connection. The entrepreneurs who came from the UT often have strong ties with each other. We also see that the descendants of the entrepreneurs who contributed to the establishment of the Twente Technical University of Applied Sciences at the time still feel strongly involved with the entrepreneurial side of the UT."



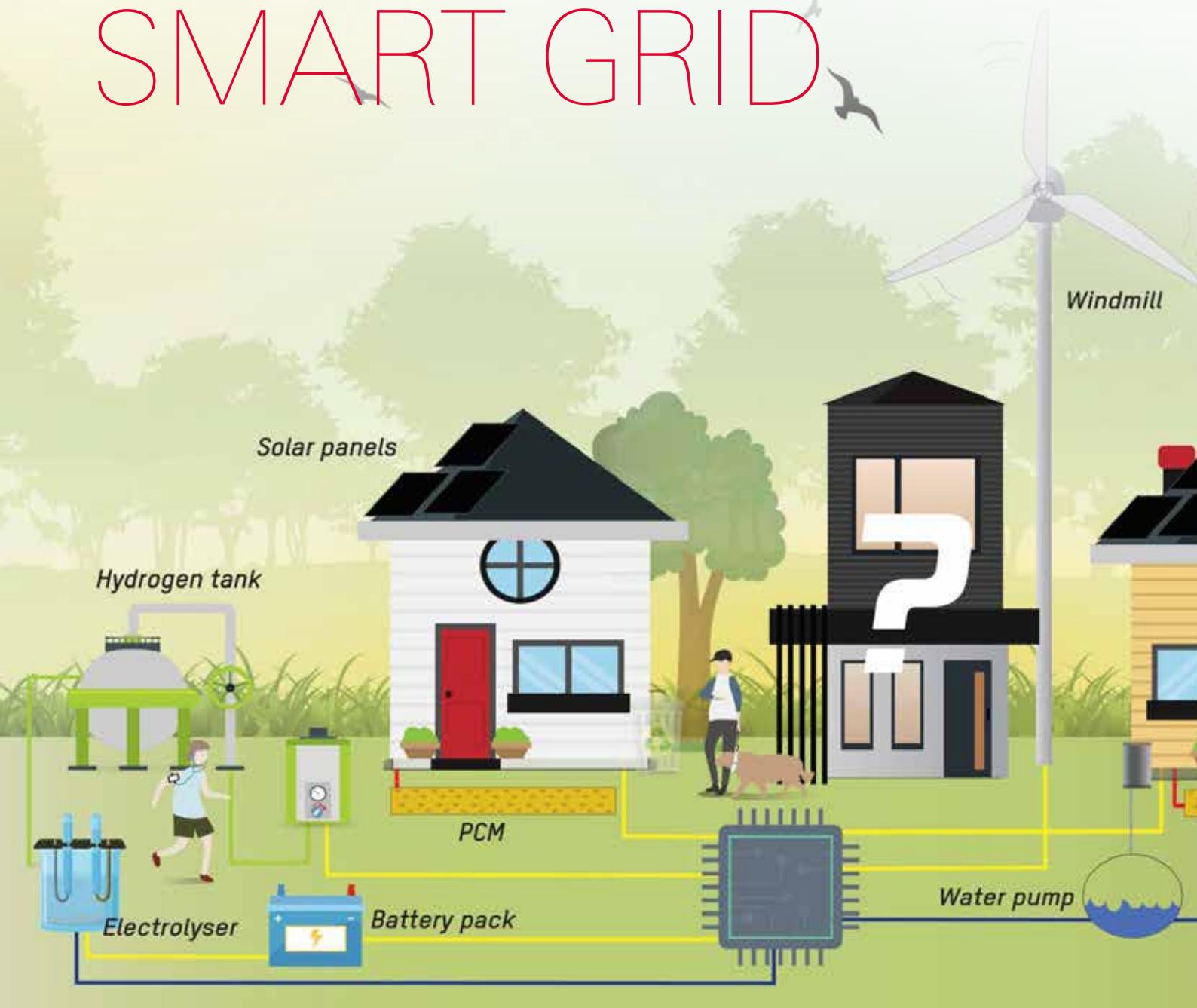
MARTIN SCHIEVINK OF AKYLA, THE SOFTWARE COMPANY FROM ENSCHEDE THAT WON THE HARRY VAN DEN KROONENBERG AWARD.

"In hindsight, I believe I have always had an entrepreneurial spirit. My mother says I often came home with more pocket money than I left with. We were enrolled in the second year of the Computer Science programme when the University offered a practical entrepreneurship course. Bart van Borssum and I started Akyla in our rooms. The best thing about starting out like this is that the stakes are lower. If you start when you are 40, you will have a family and a mortgage to consider. We had the freedom to see how things went. It was little more than a fun job on the side for us."

My tips for entrepreneurial students? Just get started, seize that opportunity, because you have nothing to lose right now. Anyone can learn to be an entrepreneur. Do not expect success to come overnight. We have been doing this for twenty years now, but only really got good at it over the past decade or so. That is partly because we have focussed our efforts on the development of software for the staffing sector."



STUDENTS HOUSES WITH SMART GRID



This year, the campus of the University of Twente will get an experimental neighbourhood consisting of ten to fifteen sustainable tiny houses. Researchers, students and businesses will use these to test smart systems for energy and water provision. They will also examine how residents use such a smart grid. BY Marco Krijnsen



The initiative for the tiny houses project comes from Green Team Twente. This team, made up of twenty-one UT and Saxion students, developed a hydrogen-powered car that competed in the Shell Eco-Marathon in London in July. The team was looking for an extra project to test new sustainability techniques in practice. Tiny houses seemed like the perfect solution. They will be built on the University campus between the former Faculty Club and the Paviljoen. The first three houses are scheduled to be erected this year. Within five years' time, there will be a total of ten to fifteen.

Students get to live in these houses for a year, before making room for new residents. "We will gradually scale the project up," says Mariëlle Winkler, programme manager campus & innovation at the UT. "We will use the experiences gathered from the first three units to improve the design of the other tiny houses. The knowledge we acquire regarding energy issues can then be applied in buildings on campus and in residential neighbourhoods."

Sustainability is part of the houses' construction, which is circular and modular, and their water and energy systems. Energy generation and storage are provided for using solar panels, wind turbines, battery packs and hydrogen. The goal is also to make the tiny houses self-sufficient when it comes to their water supply.

The system decides

An important aspect of the experiment is the behaviour of the residents. Researchers from the Behavioural, Management & Social sciences faculty are therefore closely involved in the project. "A smart grid means that the system decides whether and for how long you can do laundry or take a shower, because it takes the amount of sunlight and the available energy supply into account," Winkler explains. "The question is how people respond to that. You live in a community and have to make it work together. How will that turn out in practice? Would it help if there was an app or a display that tells you exactly how much energy something takes? What is the rebound effect? To what extent do residents become laxer in their behaviour, because they believe they are doing a good thing for the environment?"

Experiments with sustainable energy techniques are being conducted all over the Netherlands. Green Team Twente's tiny houses project goes beyond those existing initiatives, says team leader Matthias Haalstra. "We are talking about the integration of various methods of energy generation and storage, the water cycle and sustainable construction. We are also studying the social aspects. The combination of all those factors is what makes this research project so special."

PROFESSOR OF ADVANCED ROBOTICS, STEFANO STRAMIGIOLI

Stefano Stramigioli likes to read about mathematics in the evening. On weekends, he dives into the world of quantum mechanics. The professor of Advanced Robotics has an insatiable thirst for knowledge. "Creativity is about putting together seemingly unrelated things." BY Marco Krijnsen PHOTOGRAPHY UT Archives

The office of Stramigioli (51) provides a concise overview of the tumultuous development of the field of robotics. On his bookcase lies part of the robot he put together as a sixteen-year-old high-school student. The machine autonomously poured water for the members of the graduation committee. On his table sits the Tech Transfer Award, the prize for the best European robotics innovation that was given in 2016 to the robotic bird that was developed in Twente. Anyone who listens to the professor will hear about what comes next. "There is still so much room for improvement..."

The wonders of flight

Stramigioli has the means to take the next step. Last year, he first received the Advanced Grant (€2.8 million for the continuation of the research into robotic birds) and then another €16 million for the European Commission's Digital Innovation Hubs in Healthcare Robotics project. "This ERC gives me the freedom to focus all my attention on fundamental research, without having to deal with emails and other administrative matters."

There is a lot of work to do, Stramigioli thinks. He was recently made a member of the Royal Holland Society of Sciences and Humanities. The field of robotics is still in its infancy in a way. Take the PORTWINGS project, for example, which focuses on the development of robotic birds. "Flying is an incredibly complex process, something wonderful that we only have a limited understanding of. What people do is only a poor imitation of what nature itself can do. Our best technology is nothing compared to the capabilities of birds. The SR71 Blackbird (Lockheed's military reconnaissance jet) can achieve a speed of 32 body-lengths per second; a swift can do 140. The roll rate of the Skyhawk (the most agile aeroplane in the world) is 720 degrees per second, while that of the barn swallow is 5,000."

Stramigioli hopes that robotics can catch up to nature for two reasons. "On the one hand, there is a philosophical aspect involved. I want to understand what no one else can understand. Turbulence is an even more complex phenomenon than relativity. I do not expect to solve the one-million-dollar question regar-

ding turbulence. Yet if we can learn more about it, we can put our insights into practice, e.g. to develop new vehicles or ways to generate power. That is my practical drive."

MRI-compatible robots

When it comes to medical applications, Stramigioli's department has made great progress with the development of so-called MRI-compatible robots. A new technology that was developed at the UT links the fields of robotics and imaging together. Since the robot is made of plastic instead of metal, it can be used in combination with MRI.

Stramigioli expects this new technology to benefit many patients: women with breast cancer at first and later patients with e.g. prostate or liver cancer. "They go to hospital for a screening and return home cured that same day. Once the MRI detects cancer, the robot-controlled needle takes a sample. The needle, which is operated by the radiologist with a joystick, instantly kills the cancer cells with heat or cold."

Stramigioli believes this technology can lead to a breakthrough. "The robot already exists. We are now working with Novel-T to find the best way to market it. We want to start the first clinical trials with patients in five years."

THE
THERE IS A
PROGRESS

"We want to start the first clinical trials with patients in five years"

Production loss

Another area in which the department is active is that of inspecting and maintaining infrastructure. The robots are designed to reach places that are hard or impossible for ordinary humans to get to, e.g. gas pipelines. They provide a reliable assessment of the condition of a system. Proper monitoring prevents periodical maintenance from being either unnecessary or coming too late. Stramigioli: "The production loss of factories in the petrochemical industry can be as high as €8 million per hour if production is halted. If we can avoid shutting down a factory for safety reasons, to fix a malfunction or conduct unnecessary maintenance, it will save an enormous amount of money."

Stramigioli believes that a lot more can be done with robotics. "Sixty to seventy percent of what happens in the human cortex has to do with our hands. We can do almost anything with our hands. The capabilities of robotic hands are not even close. There is a lot of progress to be made. I am now focussing on theoretical physics to take the field of robotics to the next level. At the same time, I am eager to learn more about mathematics and quantum mechanics in my spare time. More of my colleagues should do the same, because that knowledge will surely come in handy in their own field. As Socrates said: 'The truly intelligent among you know that they know nothing.'"

LOT OF
TO BE MADE



JOS BENSCHOP, SENIOR VICE PRESIDENT TECHNOLOGY AT ASML

ENGINEER LOOKING FOR

At ASML, Jos Benschop leads the research into lithography, the crucial step in the semiconductor manufacturing process. He studied Applied Physics in Twente, worked on optics at Philips and joined ASML in 1997. Since 2011, Benschop has returned to Twente as a part-time professor of Industrial Physics.

BY Hans van Eerden PHOTOGRAPHY ASML

ASML, which has its head office in Veldhoven, employs nearly 24,000 people and earns almost eleven billion euros in revenue, split off from Philips in 1984. The company grew into the figurehead of the Dutch high-tech machine engineering sector and became the global market leader in lithography machines with a market share of almost 80%.

Lithography

A lithography machine “writes” patterns using light. The thinner the lines, the more transistors can fit onto a single chip. In accordance with the famous Moore’s Law, that capacity doubles every eighteen to twenty-four months as a result of ongoing technological developments. “This gives us ever-faster computers, more advanced smartphones and bigger memories,” Benschop explains.

“The latest ASML machine can produce lines with a thickness of 10-20 nanometres (a nanometre is one millionth of a millimetre) and overlapping patterns are separated by an unimaginably small margin of two nanometre. All this is realised using complex optics and the extremely accurate positioning of semiconductor slices under the lighting.” Benschop is in charge of the research that is designed to continuously push the boundaries of lithography.

Relaxed time

At high school in Hengelo (Overijssel), he excelled at the scientific subjects, while he tinkered with mopeds and built electrical circuits from a Philips construction kit at home. A technical study was clearly in his future. He ended up choosing Twente. “Why go far away when you can find eve-

rything you need close to home?” He went with Applied Physics. “It was quite comprehensive, so you could switch to a different programme later, if you wanted.” He enjoyed his time on campus: “It was a relaxed and geeky time. We went running around campus, built a fire on the patio, visited the Grolsch brewery and organised a study trip to the UK, where we stayed in youth hostels with horrible beds.”

Natlab

He finished his studies quickly. “I learned a lot about the field of engineering. The foundation in physics was combined with subjects such as Detection & Signal Processing and Physical Measurement Techniques.” After his graduation, he left for Philips Natlab in Eindhoven, where he conducted research in the field of optics, e.g. into scanning optical microscopy. That was also the subject of his doctoral research at the UT. Next, he left for the Californian sunshine and spent two years at Philips Research in Sunnyvale. His departure there was sobering. “We were all fired because the company was performing badly.

Jos Benschop gives a crash course in lithography to the Chancellor of Germany, Angela Merkel, and the Dutch Prime Minister, Mark Rutte, during their work visit to ASML three years ago.



The latest model of lithography machine developed by ASML, the NXE:3400C (eight metres long and four metres tall with a cost of €200 million) will be ready for use by chip manufacturers later this year.



FEWER NANOMETRES

That doesn't happen if you're good enough, I thought. I lost my naiveté and became less arrogant in the process."

Success with cd-rw

As a Philips expat, Benschop had acquired the right to come back. At Philips Key Modules in Hasselt (B) and Eindhoven, he became responsible for the cd-rewritable recorder. "I am proud of the fact that we managed to bring that to market successfully. At the time, the situation at Philips was tumultuous. When I got my third new supervisor in six months' time, I was ready to leave." He applied for a job at the Philips spin-off ASML and was hired by Martin van den Brink, another UT alumnus. The latter had graduated in Applied Physics in that same year, 1984. Van den Brink has been with ASML ever since and gradually became the organisation's technical conscience.

EUV

Benschop became the first employee of ASML Research – ASML used to outsource all of its research, mainly to Philips. His job was to find out

what the successor to optical lithography should be. Making ever-thinner lines requires an increasingly small wavelength, which led to short-wave electromagnetic radiation, X-ray and EUV (extreme ultraviolet), alongside charged particles (electrons or ions). Benschop coordinated the research into the various options that was conducted by ASML's external partners. In 2000, ASML settled on EUV. After a breath-taking development and testing process, the first EUV production machines were recently sent to clients such as Samsung, each carrying a hefty price tag of around €120 million.

Industrial physics

Benschop continues to be fascinated by innovative technology, although he also makes time for other activities. Last year, for example, he was appointed – "by King Willem-Alexander – as a member of the AWI, the Advisory council for science, technology and innovation. In 2011, he returned to the UT, where he currently holds the endowed chair of "Industrial Physics," established by the

Netherlands' Physical Society. "On the one hand, physics is an important field where knowledge leads to new innovations, while on the other hand, industrial questions inspire new physics research. I want to contribute to bridging the gap between industry and universities and do so via e.g. the Systems Engineering lecture, which covers ways to handle multidisciplinary high-tech development projects."

"I learned a lot about the field of engineering in Twente"

Latest trick

The endowed professor is part of professor Fred Bijkerk's group at the UT. It conducts materials analyses for EUV optics. That should help Benschop, who is approaching sixty, with his latest "trick:" EUV lithography with a larger aperture angle of the optics to allow for even thinner lines. "I want to develop that technology further. We can always do with fewer nanometres."

People will call sometimes to ask if there are any rooms available. That is what happens when you put your student residence on Google Maps as Hotel De Graaff. Unfortunately, the ten rooms are all full and if one should become available, the new resident is in for a difficult talk. "We are not looking for humourless pushovers. Our motto: At Hotel de Graaff, anyone can become anything they want, whether they want to or not." BY Frederike Krommendijk PHOTOGRAPHY Rikkert Harink



ANYONE CAN BECOME ANYTHING THEY WANT, WHETHER THEY WANT TO OR NOT

HOTEL DE GRAAFF IS

The real "Hotel De Graaff" was once located in Enschede, in the heart of the city. It went bankrupt, was demolished in 1969 and students bought the metal letters that used to be mounted on the façade for just five guilders. They dragged their spoils to the campus in a cart and that is where they are found to this day: in student residence Hotel De Graaff on the Calslaan, that is. They should probably put the letters up one of these days, but the residents can never find the time. They are busy with their studies and, especially, a whole lot of other stuff.

"You have to be able to take a joke" - Marike Liedenbaum

Instead of luxury hotel rooms, the place offers comfortably large student rooms: nine rooms of 25 m² each and one 14 m² room. Susan Geertjes (19), student of

Biomedical Technology, has been renting that smallest room for the past six months or so. She still had not found a room during the introduction week. "In line outside De Pakkerij, I saw a drunk student. It later turned out to be Michiel (Nijmeijer (21, Applied Physics). He asked if anyone was looking for a room. I gave him my number and never expected to hear from him again. He did call me, though, and I was invited for a meeting a few days later."

Sociable is great, but also meaningless at the same time

The residents have one month to find a suitable new housemate themselves before one is appointed to them. Saying you're sociable during an intake meeting will not do you any favours. "Sociable is great, but also meaningless at the same time. We encourage everyone to do stuff outside their studies. For example, almost all of us are members of a student organisation or fellowship and more than half of us have spent a year in an administrative position. We're not looking for someone



LIKE FATHER, LIKE SON

When Technical Medicine alumnus Mathijs van Schie (26) came home in 2011 and told his parents that he had found a room in the house at Calslaan 20, his father said: "That address sounds familiar." He was right, because father Eddie, student and PhD EE between 1980 and 1990, had lived in that very same house during his own student years. "That was pure coincidence. The rooms were a lot smaller in his day, though. What is one room today was divided into two rooms back then," Mathijs explains. He left the house last year and is now hard at work to obtain his PhD at the Cardiology department of the Erasmus Medical Centre. Luckily, some things never change. "Eating dinner together almost every night, staying for coffee and a bit of TV or a movie – that is how things have always been done here. It represents the spirit of this house," Mathijs says.

ALWAYS FULL

who wants to sit in their room all day and study," says Business & IT student Karel Kroonen (32).

Being able to cook is a plus, because everyone eats together at the large square table every night. They never have any trouble dividing the tasks, such as grocery shopping, cooking and doing the dishes. After dinner, it is time for coffee and some heated discussions. "When I first got here, I was quite timid. Those discussions seemed very intense to me. You have to be able to take a joke," says Marike Liedenbaum (21), who is studying Management Society & Technology. If you want to stick around after coffee for a TV show or a movie, that's fine. If you have other plans, that's fine too.

Almost everyone is out on Wednesday evenings and house cat Sammy is left to guard the premises. This adopted cat is quite a bit meeker than her predecessor Lucy (RIP), who even visited the boardrooms at the UT to get some attention and blocked the entire revolving door. Her successor Sammy does not have her own

Facebook page yet, unlike her famous predecessor @SpotDeCampusKat. One thing she does excel at is catching mice, which she loves to bring inside as her way of contributing to the household. Susan: "You have to chase them away from behind the radiator or might find one dead in your shoe."

That is what you get when you live on the edge of the woods. The view is pretty amazing, though. "As soon as spring is in the air again, we will fire up the barbecue," Karel says. On those nights, there is no curfew and the beer flows freely. The same applies to the Sinterklaas and Christmas celebrations, which all residents try to attend. Marike: "We are all different in terms of our age and what we study, but that is fine. We respect each other. If you are busy, have somewhere to be or want to skip a meal, that's okay. However, we all do our best to be there for those few festivities every year. When we run into each other in town, that is always fun too." Let's drink to that, and to Lucy and to the bankrupt hotel.



Student house

'Hotel de Graaff' is organizing a reunion on September 28th. Are you a former resident? Then register via reunie@hoteldegraaff.nl

MY JOB

Designers of technology do not account for the user enough. "How could they come up with this," Frauke Schuurkamp-van Beek often wonders. Especially for medical equipment, where safety is the primary concern, that is unacceptable. She completed the Human Factors Psychology master's programme at the UT and now works as a Human Factors Specialist at UL, a company that specialises in understanding the interactions between people and a system. BY Hans van Eerden PHOTOGRAPHY Fokke Eenhoorn

STUDYING THE INTERACTION BETWEEN MAN, MACHINE AND ENVIRONMENT

"The programme was very interactive.

We conducted a lot of research in teams, trying to find out how things work in practice"

The interaction between man and machine and how technology contributes to human action have always fascinated Schuurkamp-van Beek. "You can design something that looks great, but it is even more important that people can use it well. I often think to myself: 'I would have designed that differently, there is a better way to do this.'" That was reason enough for her to follow the Psychology bachelor's programme at Saxion University of Applied Sciences up with a Human Fac-



tors Psychology master's degree at the UT. "I was not interested in technical design itself, but this programme did appeal to me. This is the only programme in the Netherlands that deals with the interaction between man, machine and the environment."

She never had time for student life because of her job, but she was very serious about her studies. "It was not a boring programme that required a lot of reading. Instead, it was all about practical applications and interactivity. We conducted a lot of research in teams, trying to find out how things work in practice." The supervisor of her final thesis project, which explored ways to improve the user-friendliness and safety of an IV pump, put her in contact with UL. The American "KEMA" wanted to set up a Human Factors department in Utrecht that would focus on medical equipment. "After completing my studies, I immediately got a job there."

That was in 2013. These days, Schuurkamp-van Beek and a colleague supervise a team of twelve people and collaborate with teams in the US, Japan and the UK. "We visit different countries to conduct on-site user tests with a piece of medical equipment, ranging from lancets to surgical robots. This is always done together with a colleague, often one from a different location's team, in an effort to work together as much as possible as one giant team. After all, users in different countries are never the same. For a new insulin injection pen, for example, we invite diabetics and watch how they handle the product: what goes wrong and what do they struggle with? We advise the manufacturer on ways to improve the product's safety and about the Human Factors process for the certification of their new product: define user profile, draw up risk analysis, conduct user tests, etcetera."

Setting up research, involving users, collaborating with designers and other specialists; she learned all that and more during her time as a master's student at the UT. "Instead of looking for errors yourself, you identify problems in the interaction with users. Rather than blaming the user, you look for the underlying flaws in the product's design." At just one year, the programme was a bit short, though. "There is so much to learn in this field. It is especially huge in the US. It would be good if the master's programme was extended to two years. When new, stricter guidelines for medical equipment enter into force in Europe next year, these Human Factors requirements will apply to many more devices. Businesses looking to launch their products on the European market will then realise just how important our work is."

AGENDA 2019

Thursday 11 August

CuriousU, Summer school of the University of Twente

Monday 2 September

Opening Academic Year

Friday 4 October

Alumni Talks

Friday 29 November

58th dies natalis and reunion THT

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UNIVERSITY OF TWENTE is a modern, enterprising research university. We work to develop the technologies that will define the future of ICT, biotechnology and nanotechnology. We are already acknowledged as world leaders in several areas. We approach new technology in the context of its relevance to society, applying insights from the social sciences and management disciplines. The combination of 'high-tech' and 'human touch' is extremely important to us. We are known for a design-led approach that addresses the needs of the private sector, and for the creation of new, innovative companies. We work on groundbreaking solutions to the major societal issues of the day, such as energy scarcity, sustainability, safety and security, and health. The University of Twente has over 2.600 staff, more than 10.000 students, a network of 49.000 alumni and some 1.000 spin-off companies.

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SPIN-OFF

BY Hans van Eerden

PHOTOGRAPHY Rikkert Harink

Walking is about maintaining your balance. After a stroke, a patient has to relearn how to do that. An athlete wants to get consistently better at it. The spin-off Gable Systems helps both with its mobile robot that provides assistance during training sessions.

Founders Sebastiaan Behrens and Carsten Voort graduated from the UT's Biomedical Mechanical Engineering programme. Afterwards, they worked as researchers on the LOPES walking robot that the University developed together with rehabilitation centres. "We did not have time to obtain our PhDs," Behrens explains. "All we wanted was to set up our own company. We took the leap in 2015."

They built a prototype for walking support, but quickly headed in a different direction. "After some market research and meetings with clinical partners, we moved from walking support to balance training. That makes our robot far more versatile, so it can be used for e.g. research into the dynamics of human motion. Balance training is a fairly unexplored area. Our robot will help with research in this field."

In a hip harness attached to the robot, the patient, athlete or test subject has complete freedom to perform various motions. The walking robot is mobile and flexible. The user can walk around the room during the rehabilitation process. Gable Systems developed the necessary innovations: a control system for the balance exercises, a self-learning camera system that recognises the position of the subject's feet, environment detection to detect obstacles and an intuitive app for mobile operation.

Gable Systems is located in Hengelo, near its strategic production partner NTS Norma, and will maintain a close relationship with the UT, which remains invested in the company via Novel-T as a co-shareholder.

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For more information:
www.gablesystems.com

"Our walking robot can be used for research into the dynamics of human motion"