


De Vonk

Periodical of  E.T.S.V. Scintilla



Year 41 | Edition 1 | July 2023



Summer BBQ 2022

MKB market

Vinum

Presidential Note

Author: Aniek Oude Bruinink

Dear physical Vonk reader, person, member, probably student, employee or alumnus,

I hope you are doing fine and are enjoying the summer-like weather at least as much as I do. The fourth quartile is ending, containing many deadlines, exams and (social) activities. Finding a balance between study and social life can be difficult, especially at the end of the academic year.

Many members are studying hard to achieve the preferred results. In combination with the sunny weather and the summer break in sight, it can be challenging to remain focused. It is the ideal situation for study-avoiding behaviour and is observed in the Scintilla room daily.

As a full-time Scintilla room sitter, I can state that the general peak of this behaviour is around 3 pm, one hour af-



ter the break. During this daily period, you can observe your fellow members avoiding their studies by getting coffee in one hour, throwing pens, staring at the snack wall, sleeping on the couch, and chatting funny nonsense. These are all examples of avoiding the study by an Electrical Engineering student.

Luckily there are solutions to this behaviour. All that is necessary is a little discipline for just one hour. It is best to move the start of the study-avoiding behaviour from 3 pm to 4 pm. After that extra efficient study hour, you can treat yourself to a deserved fun activity or a cold drink. Trust me, a well-earned cold Radler (0.0) in the sun after a work day is something to look forward to.

Going to a barbecue, pool party or joining a competition might add that extra relaxation to finish your day well.

The association has organised many of these activities over the past few months. Besides the regular lunch lectures, courses and drinks, other activities were organised. Maybe you remember the gala, Sjaarscie casino, the chess tournament or the mental health day.



Scintilla went on a city trip to Berlin. The history, impressive architecture and somehow a panther print Bugatti are things that participants will remember.

The academic year is coming to an end. That means that the board year for the 93rd board is ending. I look back on a busy year that improved my organisational skills. There are many positive memories and a few negative ones. I will carry this experience my whole life. I want to thank you for your interest in the association.

I wish you the best during this time. I hope you will end this academic year successfully. Do not forget to have fun as well! After these last few weeks, you will have a well-earned break.

Dames en heren,
Op de koningin, op Scintilla!

Aniek Oude Bruinink
President of the 93rd board of E.T.S.V.
Scintilla

Masthead

De Vonk

Periodical of E.T.S.V. Scintilla. Published once a year in the amount of 800 copies.

Year 41, Edition 1
July 2023

Editorial team

Tim Huggers, Rienk van der Wijk,
Jonas Valentijn, Wouter Nijenhuis

Cover Artist

Matthijs Aanen

Board Representative

Timo van Beelen

Print

Gildeprint, Enschede

Editorial office

E.T.S.V. Scintilla, University of Twente,
Postbus 217, 7500 AE Enschede,
☎ 0031 53 489 2810
vonk@scintilla.utwente.nl

Material

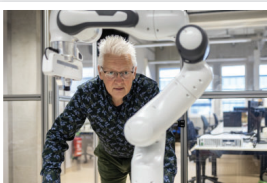
vonkkopij@scintilla.utwente.nl

All members of Scintilla receive De Vonk free of charge by post.

Nothing in this magazine may be duplicated or copied without explicit permission from the editorial team of De Vonk.

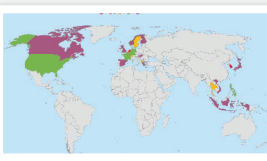
The editorial team reserves the right to change or exclude material provided by third parties, in part or in whole. The opinions expressed in the articles are not necessarily shared by the editorial team.

ISSN 0925-5427



6 Robotics master

A new master was introduced last september, so Timo has interviewed the program director Dr. Ir. J. F. Broenink about its ins and outs.



8 Main article

Summer's here, which mean that a lot of people are going on Holiday soon. We collected their data and set them out, so you can now where you can find your fellow scintillians this summer.

06

(new) Master Robotics

08

Main article
Holiday plans

10

Meet the kandi's!

11

(new) SCEER

12

Solar Boat
New direction

14

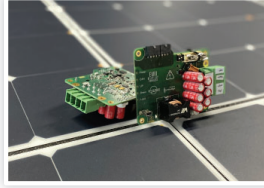
BSc. assignment
Quantum computer material research

16

Do-group tree

New direction 12

Discover what the Solar Boat has been working on during the last year and what being on student team is all about.



Column 22

Bart discusses the lack of high quality study spots for EEMCS students.



MSc. assignment
Gridshield: electric vehicle charging

Articles of Association & By-Laws

Column
Study Spot Struggles

Datasheet
Culinary Athletics from the Alps

Afterlife
Sheona Sequeira

On location
SKItrilla in the Alpe d'Huez

Puuzle

18

20

22

24

25

28

31

Editorial

Dear reader,

From the editorial team:

It seems we have recreated the tradition of a physical Vonk! Not quarterly, but yearly. Our fingers were itching to feel some paper again after only having touched keyboards for a year. Last year we had to reinvent the wheel and start from scratch, leading to some heavy additional work after the academic year had ended.

This time, we were planning to do it very different from last year. There was a very royal schedule, where we would work under the enjoyment of the borreling sounds from the Inter-Actief drinks downstairs on Tuesday evenings, starting all the way back in March. Due to not enough input and too much noise, these evenings were not as powerful to our productivity as we might have wanted.

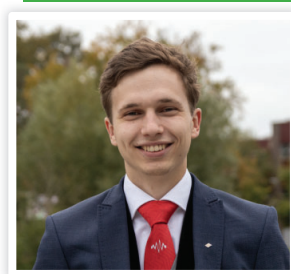
The edition you are reading now is something for you to enjoy during your summer holidays, when you are of course dreading the Scintilla Room and the fun activities that are organized by Scintilla's wonderful committees throughout the academic year. It is not possible to read on your screen or VR-glasses as the sun is shining brightly outside, and you can no longer be inside because of the heat – so a physical Summer Vonk is perfectly readable in this very unfortunate situation.

In order to pull you in and spike your enthusiasm to motivate you to turn this page around: This Vonk features cool articles that will introduce you to the new candidate board, an article with some statistics on where members spend their holidays and the do-group tree returns! Let's see how it deals with Elvis' continuation...

Tim

(new) Master Robotics

Author: Timo van Beelen



In the academic year 2022-2023, a new master's program has been launched at the university - the MSc Robotics. With 50 students enrolled in the inaugural year, the program got off to a promising start. To gain insights into the program's development and progress and see what is so unique about this new master, we had the opportunity to interview Jan Broenink, the program director of MSc Robotics.

The MSc Robotics is a master's program focused on, you guessed it, the field of robotics. It tries to encompass all aspects within the world of robotics. These aspects form the three specializations within the program: Mechatronics & Physical AI, Algorithms & Software AI, and Human-Robot Interaction & Social AI. The program aims to cover a broad range of robotics disciplines while emphasizing research, design, and innovation which prepares the student for their career after the master.

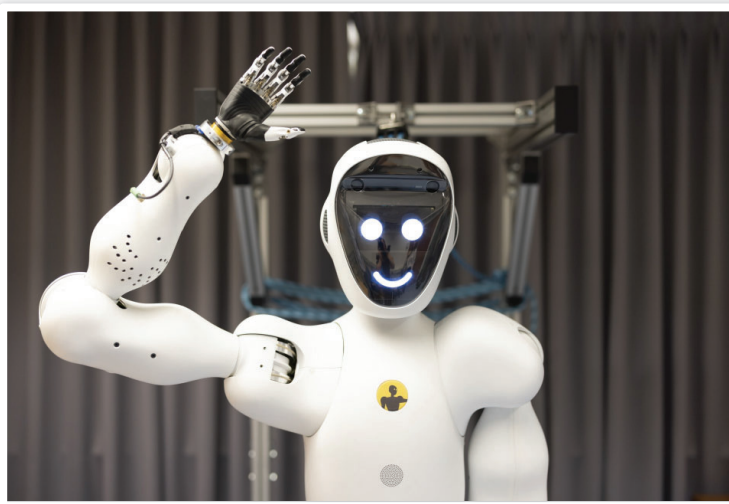
Distinguishing the Robotics Program from Systems & Control

When asked about the rationale behind starting a new master's program in robotics when the university already offered a Systems & Control program, Broenink explained that it was essential to consolidate the expertise in robotics at the university. Previously, robotics-related courses were scattered across different departments, such as electrical engineer-

ing, computer science, and mechanical engineering. By establishing the MSc Robotics program, the university aimed to bring together these resources and showcase the collective strength of the robotics community. While Systems & Control focused on mathematical and control theory applied to mechanical systems, the MSc Robotics program now incorporates software and mechanics, thereby providing a more holistic education in robotics. This 'revision' of the Systems & Control master and the incorporation of the different disciplines, made it that the creation of the Robotics master was set into motion.

Cohesion and Collaboration

Maintaining cohesion among the different specializations within the program is crucial. The MSc Robotics program encourages collaboration through its unique approach to challenge-based learning (CBL). Each quarter, students participate in CBL projects within interdisciplinary groups, which include members from all three specializations. This approach ensures that students gain exposure to and experience working with diverse skill sets, mirroring





Jan Broenink, the program director of the new MSc Robotics

the collaborative nature of the industry. To foster a sense of community among the MSc Robotics students, two student associations, E.T.S.V. Scintilla and W.S.G. Isaac Newton, provide support and engagement opportunities. Special events specifically for Robotics students have shown high attendance, indicating a positive response from the student community.

Unique Elements of the Robotics Program

The program's key distinguishing elements lie in its implementation of challenge-based learning (CBL). While

CBL is gradually being adopted by other educational programs, the Robotics program has reformed this approach to suit its specific needs. By structuring assignments and forming interdisciplinary teams, the program combines the various specializations within robotics, simulating real-world scenarios encountered in industry.

Behind-the-Scenes

Beyond the lectures and projects, the program's organizational aspects require attention. Every program needs a Programme Committee (PC) and an Exam

Committee. The transition of the PC from Systems & Control to Robotics and the establishment of a dedicated Quality Assurance Committee (QAC) ensures the continuous improvement and adherence to quality standards. The PC plays a vital role in advising and providing feedback to the program director on program-related matters. The QAC, inspired by similar initiatives from Electrical Engineering, focuses on quality control and assessment of the program's educational content and evaluation methods. The active involvement of Robotics students in these committees is crucial to ensure that their perspectives are heard and incorporated. Robotics is, however, still looking to fill these student jobs.

Conclusion

The introduction of the MSc Robotics program at Scintilla University seemed to have sparked enthusiasm and attracted a significant number of students interested in robotics. By merging expertise from different disciplines and implementing challenge-based learning, the program aims to equip students with a comprehensive skill set and foster collaboration among future robotics professionals.

The three specializations within the MSc Robotics:

Mechatronics & Physical AI

- Modelling, dynamics and kinematics
- Mechanical Design Principles
- Control System Design
- System Identification & Machine Learning
- Systems engineering
- Software Development

Algorithms & Software AI

- Perception, cognition and navigation
- Computer vision and image processing
- Optimal estimation of dynamic systems
- AI for autonomous robots
- Systems engineering
- Advanced software development

Human-Robot Interaction & Social AI

- Tele-presence robotics
- Human-robot communication
- Human-robot collaboration
- Perception, cognition and navigation
- Systems engineering
- Advanced software development

Holiday plans!

Author: Rienk van der Wijk

The weather is getting hot, drinks are often outside and my room is turning into an oven again. This can only mean one thing: summer's here! Everyone is leaving for their holidays soon, but where is everyone actually going? Why did they choose that destination? And what if you didn't decide on a holiday yet? We asked our readers for this info and more.



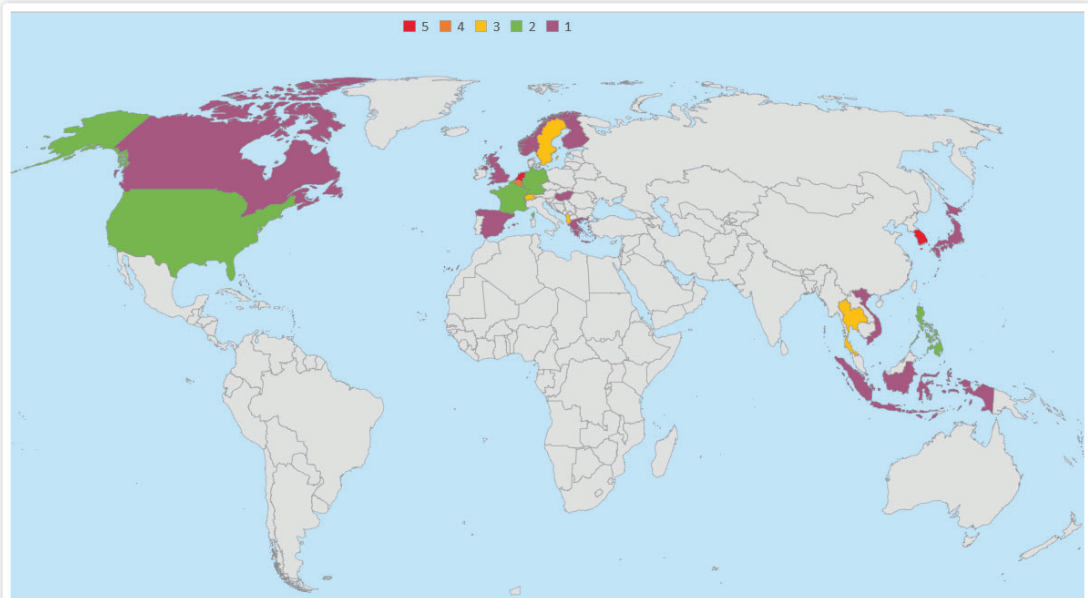
First some stats: most people seem to stay nearby. More than half the people that filled in the poll stay in Europe, of which many stay in the Netherlands. Belgium is second in visits in Europe, with a group planning to travel to the Ardennes to enjoy some craft beers. Albania is third in amount of visits, together with Sweden and Switzerland. For these last two people decided to go there on their own, but Albania also seems

connected to a group trip. A sorority has decided to go there with the help of ChatGPT, which apparently can give great travel advice.

“as a tribute to the band “De Dijk” I would love to dance on a volcano”

There's also a significant number of people travelling to south-east Asia, which is likely caused by the study tour going to South Korea this year. A lot of people from this group are also traveling to other countries in the area before or after the main trip, which leads to a lot of countries being visited near there.

Most people chose their destination because of beautiful scenery or because



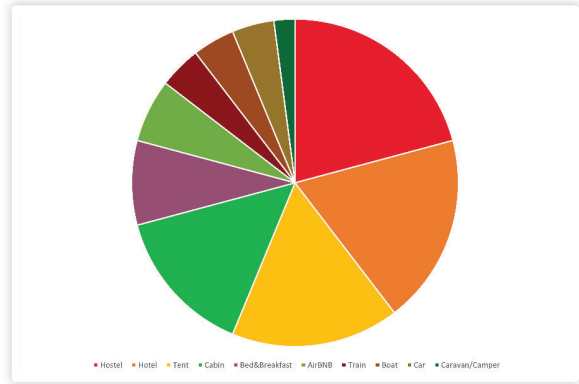
Map with the amount of people that are visiting a country

they were budgeted, often a combination of both. This probably lead to the many trips to mountain ranges near the Netherlands, which of course gives a great change of scenery from our usually flat surroundings. There's also lots of people who didn't decide themselves but who just join bigger trips.

Plans

But what is everyone actually going to do? Most people aren't entirely sure yet, although the focus always seems to be relax. Some people even take this to the extreme, with one member reporting they are going to relax so incredibly hard you'd be forgiven for thinking I am bored out of my mind. Others are staying a bit more active with a lot of people also saying they are planning on a lot of hikes and other fun activities. There is even a member that as a tribute to the band "De Dijk" would love to dance on a volcano. A lot of people are also just planning to have some drinks, although some people said that the Kick-In is their holiday.

Most people seem to go to hostels, with hotels and tents being a close second and third. That hostels are the most popular option was to be expected with the student budget, although some say these are also a great option to make new friends. The more crazy places where people will be staying are boats, cars and trains, which are strangely popular.



Pie chart of peoples accomodation

On to some more stats: most people are going on holiday for 2 weeks, with some outliers at 9 or 10 weeks. These are statistics for people who are going on multiple holidays though, with this being their summed total. Most are also travelling with a group, usually under 6 people. There are also some larger groups, which is again due to the study trip and other such trips.

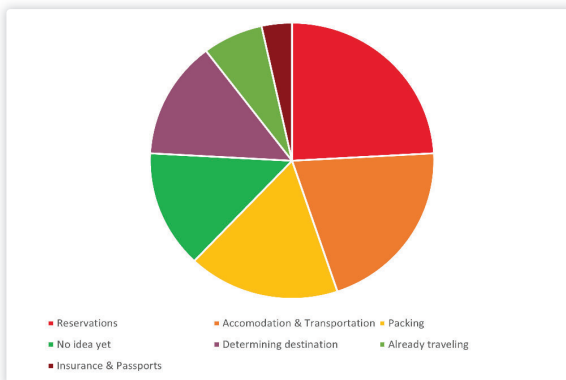
Most people are already doing reservations for their holidays, with some people still needing to determine exactly where they will sleep and how they will get there. There is also some people who are already packing, and even some who are already travelling! However there is also some people who have no idea yet what they will do. This is why we also gathered some tips from our readers for when you are still planning your holiday or possibly for later years.

Tips

The main tips for travelling are to book early, although that advice might come a bit too late. Furthermore, you should not travel with cheap flights if you need a transit. The last general tips are as mentioned before that hostels are a great place to meet other people and that ChatGPT is a useful source when starting to plan.

"I can recommend Prague.
it's a beautiful city and
there is enough to see and
do to entertain you for
quite some time"

Then on to some locations that people recommended. The Czech Republic was mentioned quite some times, especially Prague. This is a beautiful city with a lot of different landmarks and attractions to check out, while being quite affordable. Furthermore Belgium and Germany were named a lot as beautiful countries nearby. Lastly Scandinavia was also mentioned a couple times, mostly for its beautiful scenery and nice hikes.



Pie chart of how far along people are with planning

Meet the kandi's!

It is only a few weeks ago on the 11th of May, that the candidates for the 94th board of our association were announced. These 5 individuals aspire to do a board year at E.T.S.V. Scintilla, but who exactly are these people and what will they be doing?

Author: candidates for the 94th board

We will start off with our constitutional number 1, Jelte Martens. Jelte will take on the presidency as well as the function of being the STORES-admin. This means that he will ensure smooth operation to the best of his ability of both the STORES and the board itself.

Next we have Alfonso Capitano, serving as the secretary of the 94th candidate board. He will be the one that answers your mails most likely. Additionally, he will be responsible for managing all educational affairs within Scintilla. So if you have any ideas or suggestions related to education, Alfonso is the person to approach.

The third member of the 94th candidate board is Menno Dijkstra, the treasurer. After gaining experience in managing finances at the SKIC, it was time for a promotion and here it is. He will oversee everything related to money and will let you know if there will be more "FUSTen" for you and your committee next year.

Sjouke Spijkerman will handle external affairs, maintaining connections with companies on behalf of Scintilla. In addition, he will ensure enough lunch lectures for you to enjoy the coming year. Next to being external affairs, he will

take on vice-presidency, assisting Jelte wherever necessary.

Lastly we have our final member of the current candidate board, Esra Schilderink. She will be in charge of the internal affairs within our association and will be the main contact person for any concerns or inquiries regarding committees & activities.

As the 94th candidate board of E.T.S.V. Scintilla, we are truly excited to embark on this journey together and we hope we can make it a fantastic year for Scintilla. We hope to see you around soon!



f.l.t.r.: Sjouke, Alfonso, Jelte, Menno and Esra

(new) SCEER

Author: Jonas Valentijn

You might have seen the name SCEER food when joining a “borrel” or when joining one of the other activities. Maybe you were surprised and wondered what this new committee is about. In this article you get to know all about SCEER and its goal to cook healthy and tasty food for all Scintillans.



The humble beginnings on location from a remote kitchen somewhere on campus.

The Origins

To get the most obvious question out of the way, let’s start with what SCEER actually stands for? The abbreviation stands for the rather lengthy title ‘Scintilla’s Committee for Electrical Engineers that eat Regularly at drinks’. As the name implies, its goal is to prepare food for electrical engineers who like to enjoy their Thursdays at the DoMiBo. SCEER started with the new policies of the 93rd board to improve members’ health. In addition to phasing out some of the unhealthier snacks offered in the assortment of SWIPED, they were committed to starting a pilot for a cooking committee known as SCEER.

The initial goal was to arrange a kitchen and cooking equipment in cooperation with I.C.T.S.V. Inter-Actief and W.S.G.

Abacus. After the first three trials from the homes of the lovely SCEER members, the goals and feasibility became more tangible. The transport of the food was still difficult.

After some ideas were thrown around and after some consideration we applied for a SIF (Scintilla Initiative Fund). Now, SCEER was able to buy some cooking equipment for itself. This all fitted nicely in the storage closet in the BK. The trials could now continue preparing the dinners at the balcony in front of the SK and above the Abscint, which was way more convenient than preparing the meals from home. Although space was limited the trial was a success, and many more meals have been successfully prepared. In the meantime, SCEER also became a real committee!

Future and present

Now that SCEER has been cooking for four modules already, some fun stats are in order! Currently 13 meals have been prepared (~3 per module), with most sessions having more than 15+ people enjoying dinner. Recipes have been very diverse, reaching from Wraps to Stampot and Paella. Most of these have been prepared vegetarian and were well re-



ceived by the borrelaars. Currently, SCEER cooks at some DoMiBos and other activities arranged by other committees.

After the summer break, SCEER will be cooking at more events so if you didn’t get the chance to try SCEER food just yet, this will be your chance. The goal of SCEER is gradually to start cooking more often and for more people, as the committee finds ways to keep improving and growing. If you want to join the committee or arrange SCEER food for your activity, you can reach us via sceer@scintilla.utwente.nl.



Bonding during the FUST spending evening last May.

Solar Boat

New Direction

Solar Boat Twente was founded in 2016 and has been designing, building, and optimising a very efficient solar-powered boat. We compete in the Solar Sport One Competition with the National Championship in Akkrum, the New Energy Regatta Enkhuizen and the World Championship in Monaco. Last year, Solar Boat Twente had the fourth most efficient solar-powered boat in the open class of the World Championship. But how do we create such an efficient boat? A large part is the optimised electrical system.

Author: Solarboat Twente



Sustainability & innovation

This year, Solar Boat Twente has started a new subteam called 'Sustainability & Innovation'. We have done research on how sustainable our solar boat is and in what regards the technology that we use is sustainable. Based on this research, as well as from the input of our partners, we have made several concepts. These

concepts will be presented to the next team in September, and they can further develop them. By doing this, we try to have an as large impact on the maritime sector as possible.

Electrical system – the MPPT

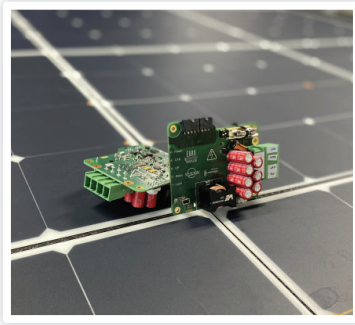
The Maximum PowerPoint Tracker (MPPT) is the electronic component

between the solar panels and the battery. The goal of the MPPT is to get the most energy out of a PV module as possible. This is achieved by charging the battery in the most efficient way possible. The MPPT changes the voltage on the battery side, tracking the voltage for which the most power is outputted into the battery. The MPPT converts the voltage using a synchronous boost converter, which differs from normal boost converters by the way it is controlled. The MPPT has a digitally implemented control loop where the measured voltage and current influence the output voltage. With these measurements, the MPPT calculates the duty cycle for the converter and switches the MOSFETs.

Not only can this algorithm efficiently charge the battery, but it can also protect the battery in certain conditions by limiting the input. The converter and algorithm of the MPPT use some components and tricks to make it as efficient as possible. One of the things that the MPPT uses are Gallium Nitride MOSFETs (GaN FETs) instead of the "traditional" silicon MOSFETs.



Photo Solarboat



The physical MPPT module

Another thing the MPPT uses to optimize efficiency is dead time; time where both MOSFETs are turned off. There are two reasons for the implementation of deadtime. The first is to prevent shoot-through, which is the quick discharging of the capacitors when both MOSFETs are turned on. This does not only impact efficiency since all stored energy is lost, but it can also damage components such as the MOSFETs. The second reason that dead time is used is to achieve or get close to Zero Voltage Switching (ZVS) which increases the efficiency of the converter.

“The goal of the MPPT is to get the most energy out of a PV module as possible”

Normally MOSFETs are switched with a hard switching setup, this results in power losses and heating these MOSFETs. During hard switching, there is both a voltage over the MOSFET and a current flowing through the MOSFET. Since this happens at the same time there will be a power loss in the device. To prevent this power loss zero voltage switching can be used, which makes it possible to have (near) zero switching losses.

With zero voltage switching the dead time is used to discharge the output capacitance of the MOSFET. After this capacitance is discharged the MOSFET is turned on and current will flow through it. This means that there is never a moment where there is both a voltage over the MOSFET and a current through the MOSFET, resulting in a switch which has zero power loss. After switching the MOSFETs can still produce some power loss, in silicon MOSFETs the body diode will generate some losses when the device is turned off. This body diode is not present in a GaN MOSFET. However, GaN MOSFETs have a higher reverse voltage than silicon MOSFETs, meaning that they have a higher loss when turned off. This is a problem when the dead time is longer than the time it takes for the output capacitor of the MOSFET to discharge. During this time the conduction losses will occur. If this conduction time becomes large the benefits of GaN MOSFETs could be insignificant.

A solution that can therefore be used is to use a lookup table in the software. This lookup table has the dead time for some current measurements. This ensures that we always use a deadtime which is close to the optimal deadtime, another benefit is that it increases the efficiency of the MPPT in real-use conditions. MPPTs are used in all kinds of weather conditions, which means that the input current of the converter can change drastically. A lookup table not only assures a small conduction time but also makes the MPPT more robust by making it more efficient for multiple weather conditions.

National Championship

On Thursday, May 18th, we left for the far north of the Netherlands, starting the race weekend with the technical inspection. Our boat must meet all the regulations, and fortunately, this was the case. Of the 9 teams, 8 boats were ap-

proved and eventually competed in the final classification. On Friday, the 19th of May, it was time for the first racing element: the endurance race, in which 55 km had to be covered as quickly as possible. After 3 hours and 12 minutes, our boat foiled over the finish, in 3rd place.

On the last day, Saturday 20 May, it was time for the other two parts: ‘Rondje Akkrum’ and the sprint. Rondje Akkrum was kicked off by a delegate from each team who had to run 1.5 km and then tap the boat, which was then allowed to leave. Our boat, unfortunately, experienced technical problems in the second round, which prevented us from finishing this race element, causing us to end in 7th place. Our technicians worked hard to fix this problem in time for the sprint, and they succeeded! We were able to start the sprint and again foiled over the finish line in 4th place. All of the race elements combined made us 4th in the Dutch National Championships

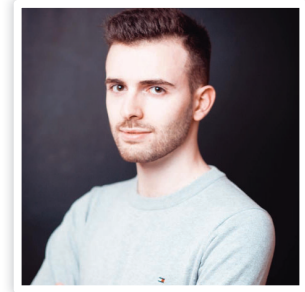
Being part of a student team

Most of the things you learn during your Bachelor’s are theoretical. A student team is perfect to add some practical experience to the mix. Together with students from different backgrounds, you work a year on a large project, here you gain a lot of hands-on experience, for example in Electrical Engineering by making all sorts of PCBs and parts. This can be done full-time, but also part-time along with your study. Some people are working on things related to their studies, others do something completely different. This makes Solar Boat Twente a great learning experience, where everything is possible as long as you are motivated.

Quantum computers of the future?

This material may be the key...

Author: Jonas Kareem



You may have seen or read a lot about quantum computers in the past years, like how they have the potential to completely outperform classical computers in terms of computation time for more complex problems. However, the emphasis is on their potential: the main reason we haven't all thrown our regular computers into the recycling bin and replaced them with quantum computers is that qubits, the quantum equivalent of bits, are extremely unstable. Having functional quantum computers requires exceptionally cold temperatures (not far off from $-273.15\text{ }^{\circ}\text{C}$!), a very isolated system such that the environment does not affect the quantum information, and hence a highly sophisticated error correction protocol. Overcoming the challenges that come with quantum computers are essential as companies such as IBM and Google rapidly develop this novel technology.

Electrical characterization

What if we could create robust qubits that have a high fault-tolerance? This is where topological materials come in with their unique properties: in essence, they allow for encoded quantum information to remain unaffected by local perturbations due to topological states being non-local in nature.

In the research that I conducted with the NanoElectronics group at the University of Twente, we investigated tin telluride (SnTe) for its so-called topological crystalline insulating properties. Before this material can be used in any future applications, electrical characterization is essential. The electrical characterization in my paper focused on

determining the carrier concentration and mobility in SnTe nanowire devices.

My thesis revolved around the design, modeling and measurement of these topological nanowire devices. I will summarize the main findings from my paper in this article and conclude on what is the next step in this research.



Background doping

Before I go further, I want to clarify a few things about the material system. As you may have learned in a course on Semiconductor Physics or similar, materials can principally be insulating, semi-conducting, metallic, or perhaps even semi-metallic. In a nutshell, tin telluride being a topological crystalline insulator means that its bulk is electrically an in-

sulator, while its surface contains conducting states. These metallic surface states are in fact the topological states that we are interested in. However, the real world is of course not so ideal: fabrication of tin telluride involves the generation of many tin vacancies, which act as a massive p-type background doping, masking the topological surface states. So, an important first step in this research is to fabricate tin telluride in such a way that we can suppress this doping as much as possible. Two things have been done in this regard: tin telluride is investigated in the form of nanowires as the surface-to-volume ratio is optimal in increasing the likelihood of observing the surface states of interest during measurements. Something else that is done to decrease the influence of the bulk doping is the alloying of tin telluride with lead telluride, an n-type semiconductor with the same crystal structure. Tuning the tin-lead ratio allows the bulk carrier concentration to be minimized, with one important drawback: at one point, we will lose the topological states that we want to make later use of. You can imagine that optimization during fabrication – which I was not involved in – is not an easy feat, and optimization is still presently going on. Moreover, the nanowires – which are in fact fabricated in Eindhoven – must be made into devices so that measurements can be performed, which can also go wrong and requires multiple iterations to improve the recipe.

Field-effect measurement

set-up

Two main measurement set-ups were researched in my paper, one relying on the field-effect, the other on the Hall effect. The field-effect is just as you may know from the field-effect transistor: by applying a gate voltage, we can locally deplete the charge carriers. The carrier concentration is then given by the following formula:

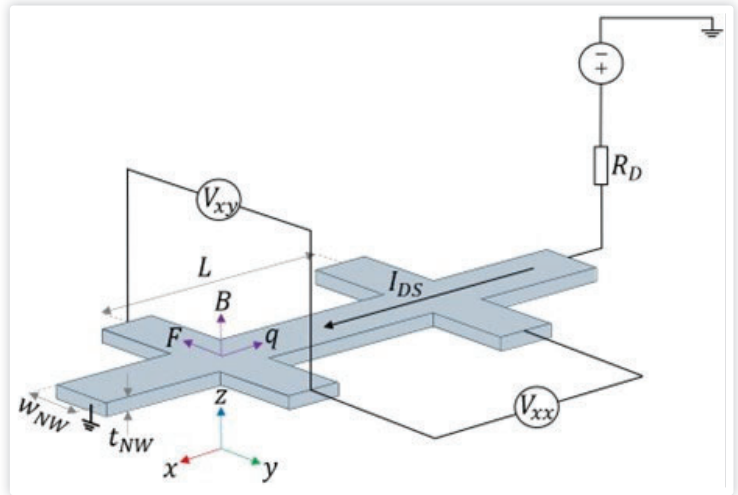


Figure 1: Overview of experimental set-up of a Hall bar device, including relevant geometrical parameters and the Hall effect. The Hall effect results from the Lorentz force on the mobile charges in the nanowire due to the applied magnetic field.

$$p_{FE} = \frac{CV_p}{V_{ch}|e|}$$

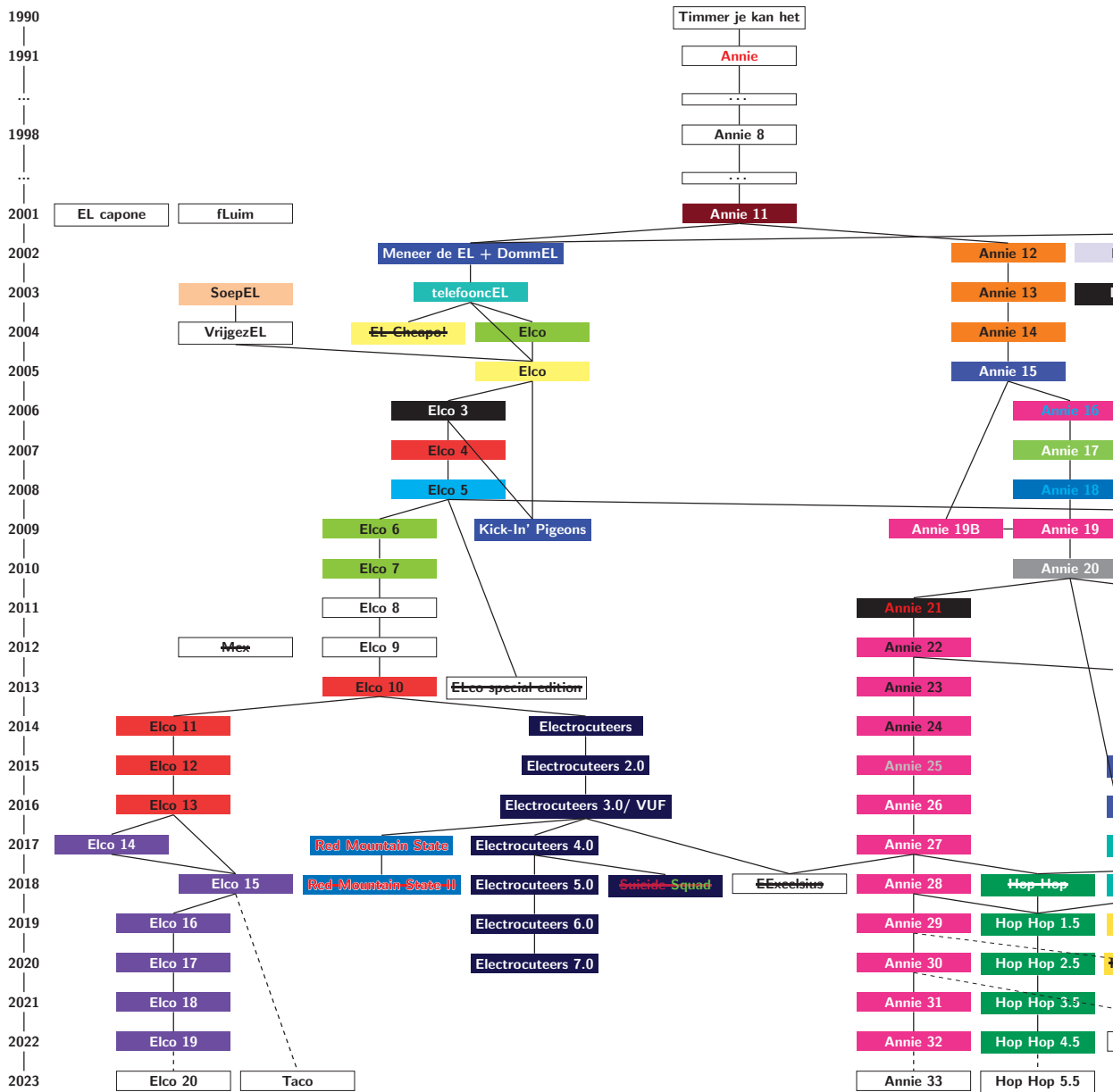
Where C is the capacitance between the nanowire and the gate, V_p is the pinch-off voltage where we have fully depleted the carriers, i.e. the nanowire is insulating, V_{ch} is the nanowire 'channel' volume, and e is the elementary charge. In order to determine the nanowire-to-gate capacitance, COMSOL modelling was done, from which we could estimate how many carriers could be depleted for a certain applied gate voltage. At most, carrier concentrations of about 10^{19} cm^3 could be depleted in very ideal rectangular nanowires with a diameter of 20 nm for a 10V applied gate voltage.

From literature we know that similarly grown SnTe thin-films have concentrations on the order of $2 \times 10^{20} \text{ cm}^3$, which implies that it will not be possible to deplete such pure SnTe nanowires without making changes to the material system and/or process flow. Actual measurements were unfortunately not possible as the fabricated devices mostly shorted: this is why the aforementioned optimization of the device fabrication is also critical. Remember, we are dealing with

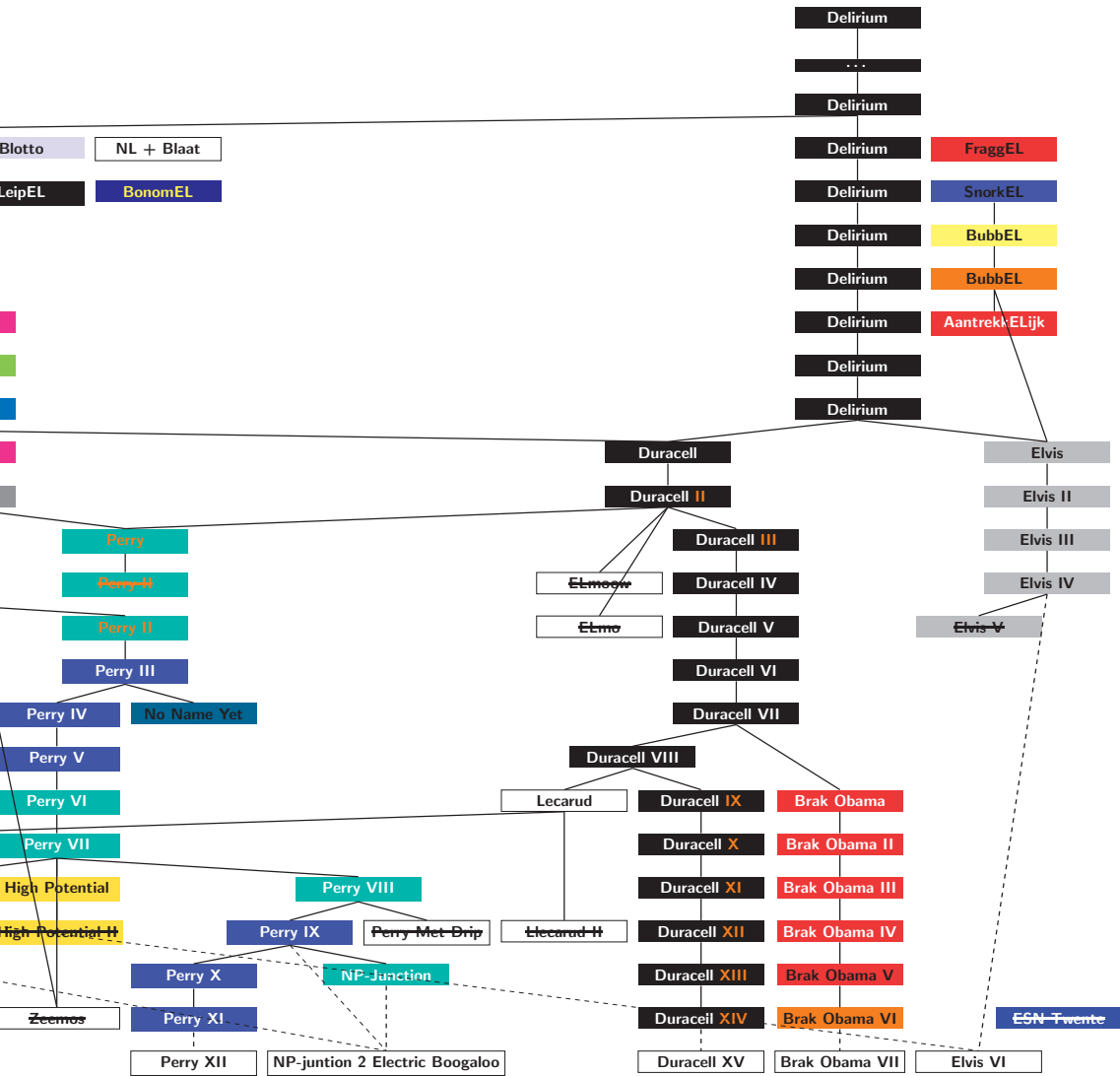
nano-scale devices!

Hall effect measurement set-up

The other measurement method relies on the Hall effect; without going too much into detail, by applying a magnetic field for a small source-drain bias, the charge carriers will deflect from their path and accumulate at the sides of the nanowire. By making use of a Hall bar geometry (see Figure 1), we can determine both the carrier concentration and carrier mobility: the transverse voltage V_{xy} relates linearly to the magnetic field, and the longitudinal voltage V_{xx} is theoretically independent of the magnetic field. From these voltages, we can extract the electrical properties of interest. Figure 2 shows the results of these measurements for one nanowire device. The measurement of the transverse 'Hall' resistance shows the linear dependence on the magnetic field which we expect, however, the longitudinal resistance shows a dip at zero magnetic field. This dip corresponds to a quantum interference effect known as 'weak anti-localization' and it is a first sign of the topological surface states that are of interest to us!



During the start of every Kick-in you perhaps make one of the most important choices of your student career. You don't just choose a fun time, but also a group of people that join you during this fun time and that can become your best friends for the rest of your (student) life. They are introduced with a few shy words by the parents, silly movies and some lame text in a booklet. Based on that information you are supposed to make the choice on which do-group to join...

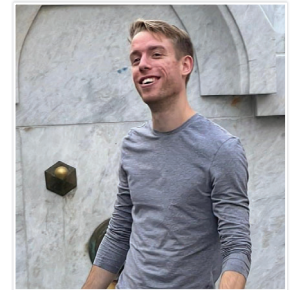


If you know of any inaccuracies in this tree or if you know some additions, please let us know at vonk@scintilla.utwente.nl

GridShield: The future of electric vehicle charging

Author: Ivo Varenborst

In the future, we expect most people will drive in electric vehicles daily and, as a result, charge them daily. Our power grid is not designed to handle the load of these vehicles. Therefore, ElaadNL proposed the idea of GridShield [1], a robust backup system that can prevent grid congestion and blackouts in areas where many vehicles charging simultaneously are causing overloads.



Driving an electric vehicle (EV) feels like driving in the future. The seemingly effortless power delivery and incredible smoothness, coupled with extreme comfort due to the lack of a noisy internal combustion engine (ICE), make the dinosaur-powered predecessors of EVs feel like they date from before the era where Tyrannosaurus rex still walked our Earth.

These are all amazing aspects of EVs, and I certainly believe they are (part of) the solution to our climate change problems. They are, however, not perfect. Their main issue is inherent to

driving vehicles of more than 1.5 meters wide at speeds well in excess of 100 km/h: they required great quantities of energy. Where ICE vehicles solved this problem by quickly onboarding energy in the form of fuel at a petrol station, EVs rely on charging and, if needed, fast charging. Therein lies the problem I would like to investigate with you in this short piece of text.

You see, to get their energy, EV chargers use the same infrastructure that provides energy for the lights in the room you are currently sitting in. That infrastructure, our electricity grid, was

never made to accommodate EVs. One EV that is charging has the same power consumption as 10 complete households. Now imagine every household b in a neighborhood has an EV, and they are all charging. The grid load goes up from b to the equivalent of $b+10b=11b$ households. All these EVs charging at the same time causes overloads, something we call grid congestion. This can ultimately result in blackouts.

Gridshield

Systems are being developed for smart charging, where the EVs are charged in

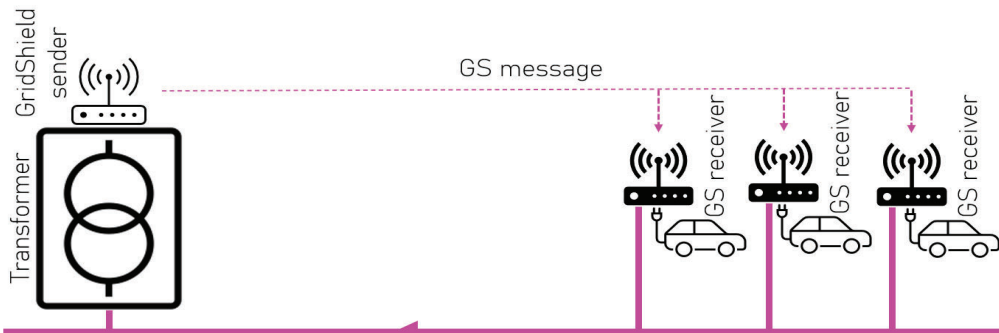


Figure 1: Schematic overview of the basic implementation of GridShield (GS) [2].

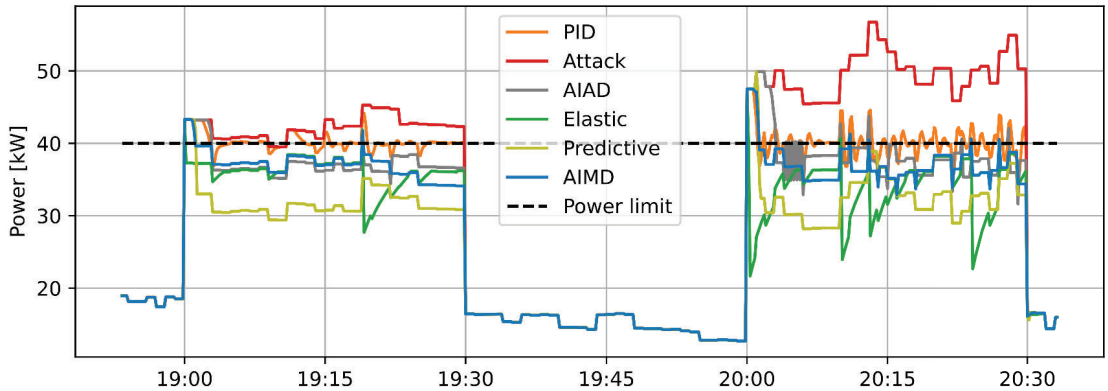


Figure 2: Total transformer power in the simulation scenario. Red is the Attack power, grey the original GridShield implementation, and blue and green show the AIMD and improved AIMD results

such a way that congestion is prevented. However, such a system can fail, which introduces the need for a backup mechanism to such a system. *GridShield*, the mechanism I worked on for my Master thesis, does exactly that.

The basic idea of GridShield is displayed in Figure 1 [2]. A GridShield transmitter device is installed at a transformer and measures its load. When an overload is detected, it sends out a GridShield message through a stand-alone GridShield network, which uses one-way communication for robustness. At the chargers of the EVs, GridShield receiver modules are installed that use the received signal to reduce the charging power of the EVs connected to them. If all is right, the transmitter should then be able to measure a reduced load after the message was received.

This idea sounds quite simple, because it is! However, the devil is in the details. While we want to reduce the power to prevent overloads, we also want to deliver as much power as we can within the limits, to prevent empty batteries after hours of charging.

Method

This tradeoff was the true subject of my thesis. To get it right, we investigated multiple GridShield algorithms to optimize the GridShield power reduction

for both goals as shown in Figure 2. We considered PID control, developed proprietary algorithms, but what worked best was to implement an AIMD algorithm. Those that did the Network Systems module might recognize AIMD from TCP, a protocol used for virtually all Internet traffic. Turns out, sending packets over the internet is quite a similar challenge to the challenge that GridShield presents!

“We see that the GridShield implementations can properly limit the charging power to remain below the maximum grid capacity.”

Results and Conclusion

Figure 2 shows how different GridShield simulations perform in a cyber-attack scenario, where the EVs are forced to alternately charge at very high and at zero power. The interested reader is referred to [3] for more implementations, results, and seeing GridShield implemented in the real world. We see that the GridShield implementations

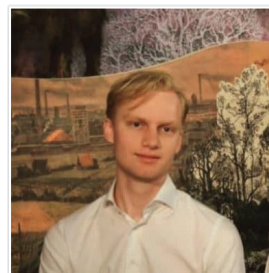
can properly limit the charging power to remain below the maximum grid capacity. The best performing Elastic algorithm (which is derived from AIMD) can reduce congestion by almost 90% at a cost of only 16.48% energy not served in the simulation scenario. This makes GridShield a promising system for the prevention of blackouts in our EV future.

References

- [1] <https://elaad.nl/projecten/smooth-hems-met-gridshield/>
- [2] F. Tangerding, I. A. M. Varenhorst, G. Hooogsteen, M. E. T. Gerards and J. L. Hurink, “GridShield: A Robust Fall-Back Control Mechanism for Congestion Management in Distribution Grids,” 2022 IEEE PES Innovative Smart Grid Technologies Conference Europe (ISGT-Europe), 2022, pp. 1-5, doi: 10.1109/ISGT-Europe54678.2022.9960301.
- [3] I.A.M. Varenhorst, “GridShield: Robust Control Algorithms to Prevent Power Outages,” MSc Dissertation, EEMCS, Univ. of Twente, Enschede, 2022.

Articles of Association & By-laws – What the Vonk?!

Author: Tim Huggers



Despite the rewards that those attending the General Meetings receive: exclusive insider-information about how the association is being run and how the money is being spent, the chance to decide on important policies through participating in votes - we understand that you might not have the time or enthusiasm to attend these often overextending (and - in all honesty - mostly boring) meetings. This last GM of the 8th of March presented the proposed changes to the By-laws and the official Articles of the Association; this article will expand on what these are and why they needed changing, so keep reading!

Every foundation or association in the Netherlands is required by law to describe the internal legal rights and rules of the association. In the case of a discussion about responsibilities or the rights that we as members possess, everyone should be able to point back to the Articles of Association, which have been established in agreement with the whole association.

On the 1st of July of 2021, the new Wet Bestuur en Toezicht Rechtspersonen (Governance and Supervision act) went into effect. It was introduced with the aim of preventing any personal interests conflicting with those of the association, for example through excluding the board member from voting when they

have a secondary personal interest to the result of the vote. Additionally, the previous version stated that for sending the documents of a GMA, the deadline would not include the holidays – implying that the pieces for the board change GMA in September would be needed to be sent 2 weeks before the holiday break in July!

The Articles of Association needed an urgent update - and with that - the By-laws of Scintilla too. The 92nd board worked hard throughout and after their board year to properly keep these documents up to date.

The articles of association now describes the process through which a mem-

ber can protest the decision that has had their membership retracted by the board. A vote would need to be held at a GMA, where the board has the responsibility to organize one. Also updated, is the scenario of the very unfortunate case of the whole board not being able to take responsibility anymore – then, at the GMA a person or group of persons would be appointed for a limited time. It is now also specified that the board is not authorized to enter any contracts with the association acting as a deposit or taking part in the responsibility of a debt made by a third party.

The requirement which probably is a lot more important to very high revenue companies or other commercial businesses is the new article that describes that board members cannot be present at decision-making moments where they have a personal benefit that goes

against that of the association.

For the by-laws, a new article 1 is added that describes often used abbreviations or terms that might need expansion. Article 2 now describes in more detail how the board is allowed to exclude groups from activities based on eccentric properties of members such as study year or member types.

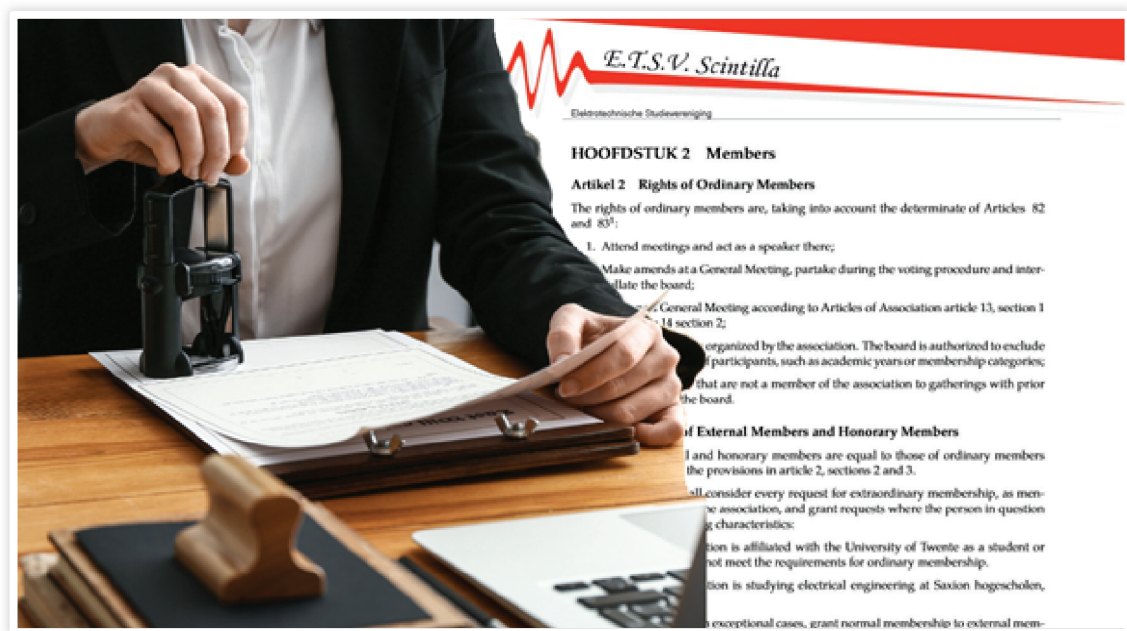
Articles 31-36 describe the various payment methods through which members can repay their debts they are due to Scintilla. Also, STORES' relation to the association and constitutionary conditions are described in more detail in articles 50-53. The same goes for the Study trip committee (SRC) in articles 54-56. It goes even more in depth into the Supervisory board to the SRC, which you

can find right afterwards, starting from article 56, but probably won't be relevant to you.

Article 77 introduces a new code of conduct, which follows the university-wide established 'code of conduct for acceptable and unacceptable behavior'. It lists very clearly what is considered unacceptable behavior: what is considered intimidation, sexual harassment, aggression, violence, bullying and discrimination. If you do not feel safe at the university and you are the victim of unacceptable behavior, article 4 explains the procedures through which a student could file a report or a complaint.

All in all, the process that started as an obligation imposed by the government, also led to a great reorganization of

the by-laws which increased the readability and clarity by a whole lot! With added chapters on important abbreviations, the STORES and the SRC, the information has been structured more clearly. The added code of conduct is a good read if you haven't before; creating a positive atmosphere for everyone is something that also everyone is responsible for.



Find the By-Laws, the Articles of Association and the Code of Conduct on: <https://www.scintilla.utwente.nl/association/official-documents>

Study Spot Struggles

Author: Bart Schuurman



Creaking coffee grinders, buzzing refrigerators, and baristas loudly tapping their portafilters on the edge of a trash bin. These are the sounds that make it impossible for me even to attempt to work at the Edu-Café. Whether you have been studying for several years or you've just started this year, anyone who has ever tried to study there in recent years will have noticed it: it's a damn noisy place.

If you look at the buildings around us, I almost get jealous. Behind us, in the Ravelijn, you have a great study area if you go up two flights of stairs from the study associations there. It's much quieter, with comfortable chairs and enough space for the students of the study associations there. We also have the well-known "home base" of TNW in Carré, with beautiful interiors, perfectly set up for TNW students to cram in those last few hours of studying before an exam.

This problem has been known to the Faculty Council of EEMCS for quite some time. There have been multiple meetings with members of the Faculty Board, where various ideas and recommendations were discussed on how to improve the situation. We have also requested an investigation into how many study spots we have for EEMCS students who want to work on their studies for a whole day. (We don't count the Westzaal and SmartXP since classes are held there almost every day.)

Last week, outside the official meeting, I finally received an answer to that one question: we basically have nothing. You could count those few benches just outside the SmartXP and the workspaces on the balcony, but next to that, there is nothing. "But what about the Edu-Café?", I hear you ask. It turns out it's not even owned by the Faculty, only the shops and association rooms are. And

apparently, the Faculty is not allowed to change the interior of the Edu-Cafe. So, it's not surprising that we still haven't been able to change the conditions for our students.

What is the proposed solution according to the Faculty Board? They are focussing on the construction of a new building on campus with enough space for everything we need: The Es. But well, that probably won't be ready for another five years or so. By then, with a bit of luck, the current first-year students will have graduated.

And now? Should we just accept it? Should we bring back those big party tents which were used for safe study spaces during the corona pandemic? Kicking out Starbucks would be a great solution, however, this is again not the jurisdiction of the Faculty. We should be getting a new Vice-Dean of Education at the Faculty soon, and hopefully, we can convince them to prioritize the quality of study spaces for EEMCS. Meanwhile, I'm running out of ideas. Maybe The Vonk should investigate how that Starbucks came here in the first place...



During the first introduction week since the move from the HogeKamp building to the newly built Silberling in 2008.



TESLA

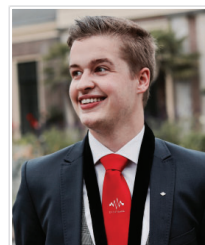
EEMCS trip

Christmas Dinner

Datasheet

Culinary Athletics from the Alps

Author: Rick Ruitenbeek



The culinary world knows no bounds, wherever you go in the world there are local cuisines to be experienced and unique meals to be had. However, if you look too far into the deepest corners of the world you might find more than you have bargained for...

And this is what the adventurers of SKItilla might just be responsible for. Whenever they settle down somewhere in the high peaks of Europe they put together a peculiar meal in order to piss off the nearby Italians: risotto with smoked sausage. Since last ski trip it has been the third time the chefs of SKItilla have made this specific dish, and thus a tradition has been founded. This combination of ingredients may sound rather cursed, but if you think about it a bit more thoroughly, this might just start becoming more sensible. Could this be the right form of protein for a skiing enthusiast, or the ideal meal to put together in a minute for a large student house? In this article I would like to uncover the secret to this monstrosity.



SKItilla Delight: Risotto Rookworst

SKItilla Delight (risotto with smoked sausage)

Ingredients: (for 4 persons)

- 1 celeriac
(Dutch:knolselderij)
- 250g carrots
- 2 red onions
- 1l water
- 1 tablet of chicken stock
- 300g risotto
- 100ml white wine
- 250g smoked sausage
- 300g frozen peas

After further investigation on the recipe I am starting to get the vibe. Risotto, just like any kind of rice, goes very well with anything that you have in your cupboards... and sometimes this thing is smoked sausage. So don't be afraid to spice up this meal by swapping out ingredients with your favorite vegetables or other exotic kinds of meat. In case you do go for sausage, make sure to get the right one... This recipe is about the classic U-shaped Dutch sausage, not the one that belongs on bread and gets soggy when warm.

What to do:

- Cut your vegetables. Cut the celeriac in small cubes, halve the carrots and cut them into thin slices, dice the onions.
- Put some oil in a pan and saute the onions for 2 minutes on low heat. Meanwhile, put 1l of water in a pan together with the chicken stock tablet, bring to a boil.
- Turn up the heat to medium-high, add the rest of your vegetables and saute those for 2-3 minutes.
- Add the risotto and fry this together with the vegetables for 3 minutes or until the risotto start to show some colour.
- Deglaze the pan with a bit of wine, stir until the risotto has soaked up the wine.
- Add a splash of chicken stock to the risotto pan (with a large spoon), keep stirring until the risotto has soaked up the stock. Continue adding stock until the rice is soft.
- 5 minutes before serving, add the sausage and peas to the pan until they are warm. Finish with salt and pepper to taste before serving.

Afterlife

Author: Sheona Sequeira



It's been approximately 1,5 years since I left the University, but honestly it seems like it was yesterday. It seems like yesterday was the day I took a huge leap of faith in myself and decided to move to the Netherlands and straight in to the second year of the Bachelor Electrical Engineering program. The journey at the UT, although relatively short, was one super fun and enjoyable period that I will remember and cherish for the rest of my life.

Study period at University of Twente 2017-2021

As every electrical engineer (well most, I think) I was quite a shy person. And moving half way across the world did not help me make me any less shy. It took me a bit of time, I think around one quartile I believe for me to slowly emerge out of my comfort shell, and see what the university had to offer other than the study part of course. After looking around on the student union website, I discovered that the University had a choir of its own. Since I really do love singing and playing the piano, I decided that joining the choir, Musilon, would be a perfect fit for me. Within the year, I had so much fun, both with singing and also simply hanging out with the lovely people, that I decided to take on the role of the Treasurer in the year 2019.

As for Scintilla, let me tell you where my journey as an active member began. Well, well, well in my first few months at University, I probably went to 3-4 activities of Scintilla, with most of them being lunch lectures. I was always curious about how the lunch lectures would be organized, but the thought of actually being one to organise them

in the future simply hadn't crossed my mind, well at least until one Karaoke drink at the Abscint. I fondly remember being asked by the then candidate board member for external affairs if I would like to join the LEX which I of course very happily agreed to.



Board year as Treasurer of Musilon in 2019



A jam session at Scintilla.

In 2018, all of the Scintilla committees were still in Dutch, but with me joining the LEX, everything slowly started shifting to English. I feel like the warmth and happiness that I felt being a member of the LEX, motivated me to join more committees, namely the Vonk and the Lustrum Camp. Have you heard of the saying “All play and no work makes Jack a pure toy”? Well that’s something I was on a mission to avoid. So, no matter how active I was in Scintilla and Musilon, I was adamant to make sure it would not have any consequences on my studies. As a young child, I have always been intrigued by the different medical devices we have in the field, ranging from devices as simple as a blood pressure system to complex MRIs and surgical robots. I finished my Bachelor thesis on the 5th July 2019 where I defended my research on ‘Development of an algorithm to determine the respiratory rate in children using Stereo Camera’. This assignment had a lot to do with computer vision algorithms, but still included amounts of signal processing. At the end of my

bachelors, I discovered something new about myself and that was that I really liked Computer Vision. But since I also had a fondness for robotics, I did my Masters Electrical Engineering with a dual specialization. This allowed me to learn a lot more on both the topics that I really found interesting. During the course of my Masters, I did my internship on Signal Processing of respiratory data within Demcon. I feel like my internship really helped get me into a nice work rhythm. Furthermore, I also worked with a lot of nice people who were always very open, welcoming and helpful, which made it really nice to go into work every morning. For those of you who do not really know Demcon, I will introduce it to you a bit later.

I concluded my study time in the University of Twente after defending my approximately 6.5 months long master thesis at the Robotics and Mechatronics group in July 2021. Thus scoring myself a Masters degree in Electrical Engineering with my specialisations in Robotics and Mechatronics And Computer

Vision and Biometrics. The subject of my thesis was the 3D Reconstruction of the Breast Surface from Ultrasound

“All play and no work makes Jack a pure toy’.”

Images acquired by a 7 DoF robotic manipulator. Quite a big subject, one may say, but trust me the research was really captivating!

Software Engineer at Demcon (2021 - Now)

So let me start by introducing the company I work within (as promised a bit earlier). Demcon is an Advanced Mechatronics company that works on a lot of exciting projects in both the high tech and medical industries and is headquartered in Enschede (right in-front of the University actually). I, however, decided to move to a new home and a new city, Eindhoven and thus work at



Collecting my Master's Diploma.

the Demcon Eindhoven branch.

Many people ask me, you studied Electrical Engineering then why do you do Software? Well the answer is pretty simple honestly...It's because I like it...

Demcon offers you a chance to work on a wide range of projects. To name a few in the medical area, it could be something as small as a wearable on your arm that senses your heart rate to something as large as a respiratory machine. And I can happily say that I really do like working on such projects. My role in Demcon is an Embedded Software Engineer, which is why despite the on-off corona restrictions in 2021, I mostly did work in the office together with most of the other Embedded software engineers. I am actually really happy to have a nice bunch of colleagues who really made me feel welcomed into the company.

When I started working in August 2021, there were still quite a bunch of Corona restrictions albeit less than the previous year. This really made it quite difficult for me to get to know other members of my project team. You would of course see their faces on Teams, but that isn't really the same as seeing a person in real life, is it? Thankfully, the corona situation has taken a turn for the

better, and we can continue living our life positively.

One of the qualities that I really do like about Demcon is that they really do try to allow every individual to reach their potential. You are encouraged to try out new roles and opportunities. I have recently taken over a new role as the Internship Coordinator for the software department and have become a board member of the Personeelsvereniging. Having opportunities outside my job description as a Software Engineer, really helps me develop my soft skills a lot

more and helps me network with people from different backgrounds.

Well, to use the reverse of the quote I earlier used during my study period, I know quote 'All work and no play makes Jack a dull boy'. Well that is definitely not the case in Demcon. There are activities organized at least once a month where in a bunch of colleagues come together and have a drink and furthermore, we always have the Vrimibo. And not to forget the yearly super nice Demcon weekend. The hours that I am not at Demcon or at a Demcon activity, I really like to either hang out with friends, just relax, play the piano and sing a bit or go to the gym/kickboxing.

Let me conclude by saying something really short and sweet which hopefully can positively strike a nerve in you (the reader). If you like something go for it. If something costs too much energy, there's probably something else out there that suits you better. This is really the best way to find your true passion.



Me at yearly Demcon weekend..

SKItilla in the Alpe d'Huez

SKItilla went on a trip again for the first time in a few years to the wonderful Alpe d'Huez. 15 students enjoyed a wonderful trip from which most came back in approximately the same state. Enjoy this "dayreport" with all the ins and outs of what happened.

Author: Rienk van der Wijk



On Friday the 24th of February, our journey began from Enschede Central. After a few transfers, we arrived our bus stop in Utrecht, where we were a bit confused about which bus to take. Luckily, bus number 69 from Brouwertours arrived, out of which a dozen tobacco enthusiasts yelling "ROKUH!" came rolling. This immediately set a tone for the rest of the trip, which was filled with several stops, many peculiar statements and some sleep. After 15 hours we arrived in the beautiful Alpe d'Huez around 07:30. We dropped our bags,

drank the necessary coffee and decided to spend our time by going for a walk up the piste. This delivered on some great sights, after which we welcomed the committee members who travelled by car to bring the groceries. The necessary frustrations were had with the traveling agency, appartement- and equipment rentals, but in the end we got our rooms. We started unpacking and cooking, enjoyed a few cold ones and prepared for the next day.

To make the most of our ski pass we had to get up early so breakfast was at 07:45, which was nicely supplied with some fresh baguettes. Because some were still getting used to the ski holiday rhythm we weren't entirely successful at being on the slopes at the earliest possible time. Since Ben also had to get some new shoes already and some people already had to exchange their rentals we ended up being on the slopes somewhere after 10:00. Everyone still had to get used to skiing again (or skiing for the first time for a few) so we stuck to the green and blue slopes, which already proved quite a challenge for some. Throughout the day it gradually started to snow, which meant a few things: it got colder, vision got worse and, most importantly, better slopes for days to come. Therefore, most people stopped skiing earlier than the lifts closed, hoping for better conditions for the next day. The slope map was checked for which parts might be nice to explore, since to reach some places you have to travel for quite a bit. It ranges from Auris on the right, to Vaujany to the left, Pic Blanc at the top and of course Alpe d'Huez at the centre.



Day 1: We spend our time by going for a walk up the piste. This delivered on some great sights

Unfortunately, the quality of the slopes was not yet top-notch the following day, but that certainly didn't stop us. The outer corners of the ski domain were explored, from Auris to Vaujany. Alexander and I reminisced by zooming down the familiar blue slope at Vaujany, just like in 2019 (when Alexander still did this unintentionally). The process of zooming down the slope had already become a phenomenon during this holiday, which, inspired by our noisy bus-mates, often went paired with "STREPUH!". We also wanted to try a black slope, but the quality had degraded too far so we decided to leave it for the next day. That evening, plans were made to ski the longest black slope of the Alps: La Sarenne. This slope was supposed to be manageable in difficulty but exceptionally long, hence its black rating. With these plans and a few drinks consumed, we went to bed early, knowing it would be another early morning.

The following morning we tried for an early start, but sadly there was a long line for the bakery, so breakfast took a bit longer. This gave appartement 300 some time to tidy up, as it had become the (after)borrelroom, since its balcony was also the beer fridge. After breakfast we decided to split up into a group that would ski La Sarenne and a group that would stay lower on the slopes. After we established in the big gondola that La Tunnel would indeed not be an option for the rest of the week (more rock than snow could be seen), we enjoyed the fantastic views from the Pic Blanc. Then we started our arduous journey, which seemed to be going well at first. But then, disaster struck! During a tough part of the descent which everyone had some difficulties with, Alexander suddenly started "STREPUH!" (probably unintentionally). He French Fried where he should have Pizza'd and he had a bad time. At high speed he made a jump which he landed completely on his right leg, followed by a fall. Since he afterwards had difficulty with putting



The aftermath of Alexander's accident

on his ski and walking, we decided to get some professional help. We couldn't call the ski patrol from on top of the mountain (France, fix your network!) so we got our help from a nearby ski lift. Within 10 minutes someone from the ski patrol was with us (this, in contrast, was well-organized) who confirmed that Alexander's ankle was indeed injured and he had to be brought to the clinic in the village. One banana and, to our surprise, a helicopter flight later, and it turned out that his ankle was indeed fractured. The rest of the slope was confirmed by the others to be a piece of cake and most went to bed early after this tiresome day.

The snow had improved over the days thanks to the hard work of snow cannons, although more and more stones did appear on the slope. Auris was revisited, this time by the calm ski squad, as it was more accessible this time. After some slightly ice slopes and a lot of cold wind, we were rewarded with some beautiful views, which helped us decide on our next goal: the top of the Pic Blanc. Although a part of the group had already been here to ski La Sarenne, the less experienced skiers had not. So we continued on our way whilst throwing snowballs at each other (which is encouraged to do while skiing, but discouraged to do against people who are

skiing). When we were almost there we discovered that the gondola to the top was closed already, so we went back to the appartement. Here an error was discovered: on the way back from the hospital in Grenoble with Alexander, more beers were bought since, to our surprise, we were already out. However when unloading the new boxes, a load of cans was discovered which apparently were still full! Luckily some of our group had some solutions in mind and the problem was resolved by the end of the week.

The next day we headed straight to the Pic Blanc since we didn't want to miss it this time. Once we arrived at the top we decided it was the best location for

"He French Fried
where he should have
Pizza'd and he had a
bad time"

a group picture, although Alexander couldn't be there physically, an issue fixed in post. We then split up again, as not everyone seemed fit to do go down the black slopes of the top. However we were not even entirely safe on the blue slopes. During a quick descent Jonas had a fall as a result of a collision with

a bump. He fortunately didn't break anything except for his ski, which ended up quite crooked. Luckily we were close to the gondola and he had purchased warranty so there were no problems with getting a new pair. After ending the day with a good après-ski session on the mountain and continuing in the appartement, the last day came into sight, so plans were made to check out the last parts of the ski domain.

The next morning we set a record for earliest on the slope so far, after which we raced down the remaining slopes. The valley of Oz and Vaujany was explored by the people who only learned skiing that week. The more experienced skiers decided some more risky actions since it was the last day: jumps were made, slaloms were swerved and a lot gates were used for limbo-skiing. We also went out for dinner since we didn't want to completely miss the French cuisine. Everyone enjoyed fondues, raclette, wine, stone-baked meat and eventually a



Jonas being glad he paid for warranty

local drink called Genepy. Once back in the appartement, where the end of the trip seemed to be approaching, a large part of the group got motivated to explore the night life, but you should ask about those stories in person.

The next morning we had an early start (or late, for the ones that skipped the

night) since we had to be out of the appartement before 8. After thoroughly cleaning and packing the car we went looking for a terrace to enjoy the sun till our bus left. Enjoying the familiar Grolsch that we discovered so far from home various activities were done to spend the day, such as a mechanical sled run, a few walks and missing the sunset. We were well prepared for a fun bus trip, since it was quite the experience on the way to Alpe d'Huez. To our dismay we found out that the bus driver was also quite a fan of zooming, so a fun ride or good sleep could not be enjoyed. The next morning we did arrive quite early since the fast drive only took 12 hours.

In general everyone enjoyed the trip, from experienced to first-time skiers. In the end 2 pairs of ski's, 3 pairs of shoes and 1 ankle were broken. The slopes were conquered and we enjoyed a lot of fantastic dishes. Now let's hope next year the only thing we break is the tradition of breaking stuff.

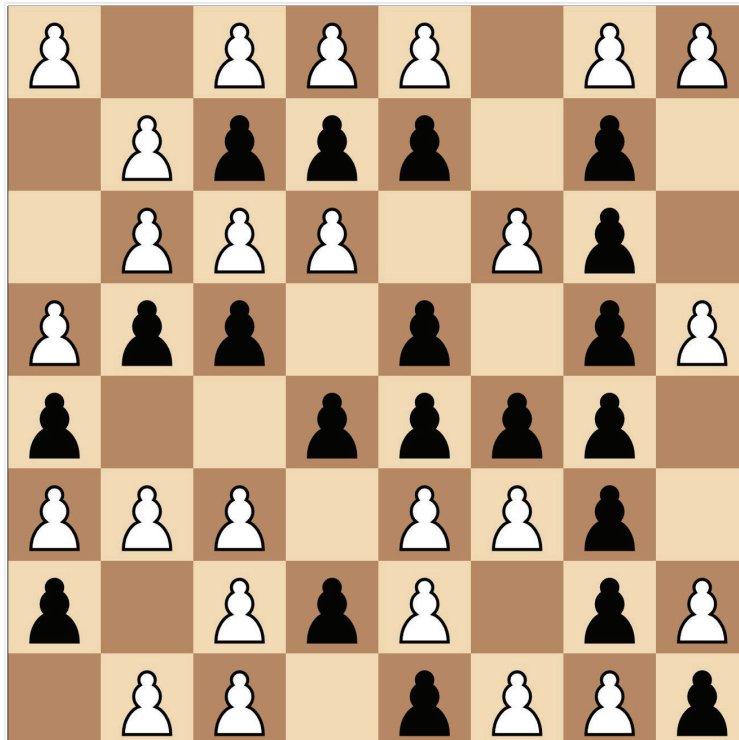


Group picture of all the SKitilla Enjoyers on top Pic Blanc (Alexander photoshopped in from the couch)

Puuzle

Author: Truusje

I have greatly enjoyed the rise in popularity of chess in the last years. It is sometimes sad to see the controversies around the sport. But I am glad nobody was accused of cheating at the chess tournament of Scintilla! I hope you enjoy the puuzle for this summer and may it bring you back in time when the drinks where as tasty as today!



Good luck with solving Truusje's Puuzle!
 If you have solved the puuzle, please send your results to vonk@scintilla.utwente.nl and if you are first you might win a prize!



YES! WE'RE LOOKING FOR INTERNS AND GRADUATES...

For our design offices in Berlin, Germany, but also in Nijmegen and Borne, we are looking for **interns and graduates**. We have several assignments. Want to know more? Check our website for details.

MORE STUDENTS INFO:

www.bruco-ic.com/internships-and-graduation



SCAN QR-CODE



bruco
INTEGRATED CIRCUITS

www.bruco-ic.com