DISPUUT TRANSPORTKUNDE PANDORA

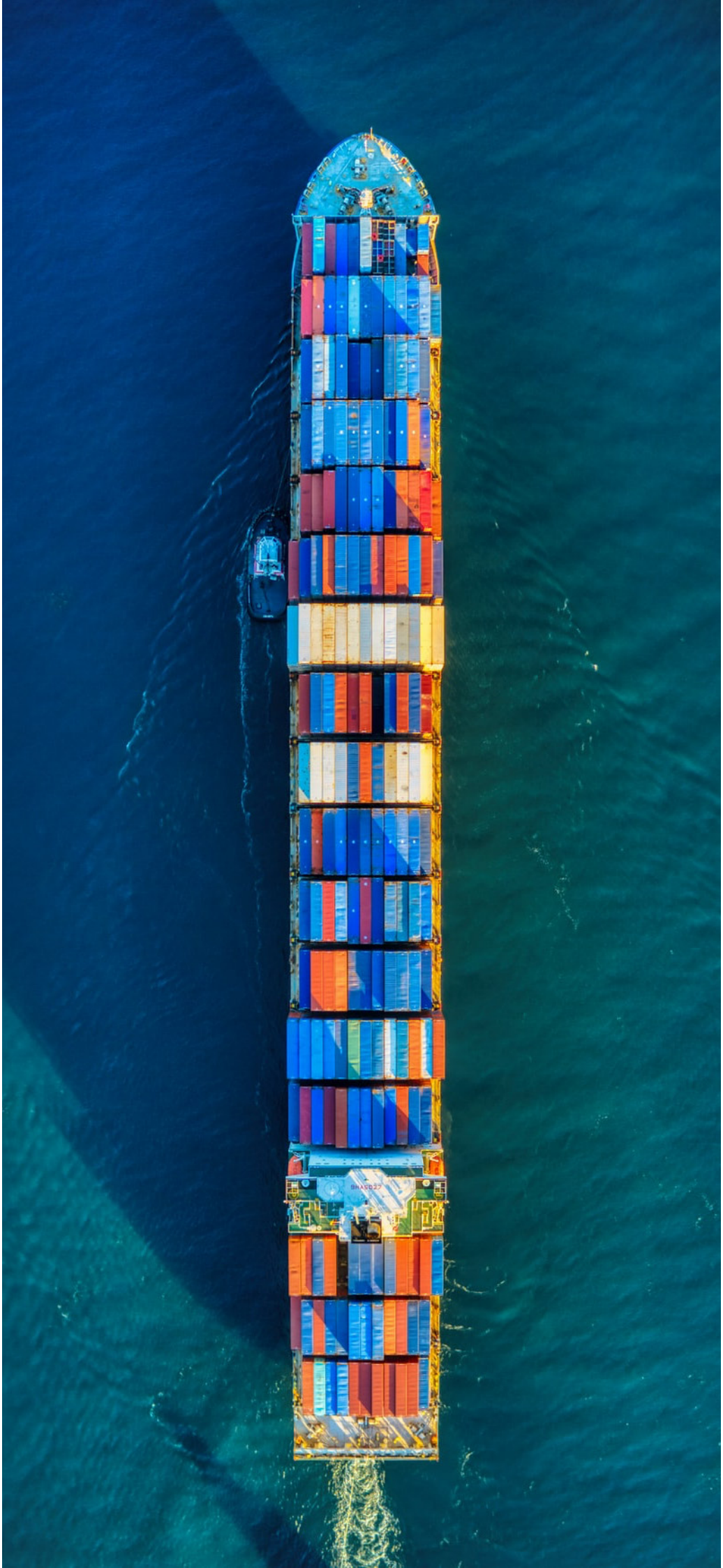
NetwerkNieuws.

JAARGANG 32 | NUMMER 1 | FEBRUARY 2022

Internship at Nemag
What they learned

Recent Activities
What we were up to

Team Epoch
About AI in transport



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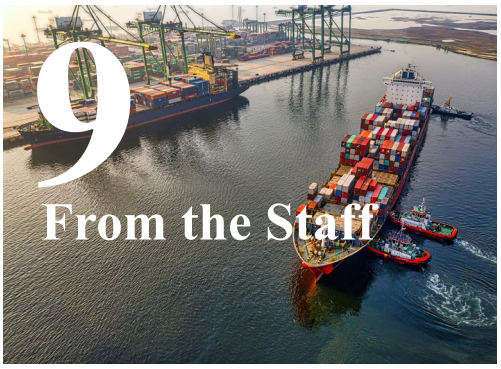
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Colofon

Dispuut Transportkunde
Mekelweg 2, 2628 CD, Delft
E: info@transportkunde.nl
T: +31(0)15-2786566
W: www.transportkunde.nl

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Introducing

By: Board 2021-2020

Noémi Los, Chairman

voorzitter@transportkunde.nl

My name is Noémi Los and I will have the honour of filling the position of chairman in this year's board. After having lived in Delft for six years, I exchanged Delft for Rotterdam last summer. This move had of course only one reason: to live closer to the Port of Rotterdam:) I did not choose the MSc Mechanical Engineering track Multi-Machine Engineering for nothing. I find the logistics that are involved in complex systems very fascinating. Ever since I was a child, I have always enjoyed solving puzzles. Sudoku's are my favourite. Most of the courses of MME are like puzzles. You observe a problem and have to find a solution for that problem by optimizing the system using acquired knowledge. That is what I like the most about MME.

Furthermore, I do not like to sit still. I love organizing events and being in contact with people. Hopefully this year we can organize events again that are in person, so that we get to know each other better, but also of course the companies:) To conclude, a fun fact: Curious about who is behind the Instagram account Dispuut Transportkunde Pandora, well that is me. If you do not follow the account yet, shame on you!

The new Board

Noor Wilking, Secretary

secretaris@transportkunde.nl

Hello! I am Noor Wilking and I was born and raised in Breda in the south of the Netherlands. Since 2017 I have lived in Delft to study mechanical engineering. In high school I liked the beta subjects and I had lots of interests, so I eventually thought that mechanical engineering was best suited for me as it's a very broad program.
During my minor I obtained a degree in teaching mathematics and I found out I love teaching. Therefore I ended up working in three different high schools last year. Although I've truly enjoyed my time there, in September I chose to start the master Multi-Machine Engineering, because I felt this was the master that fitted best with the courses I had in my bachelor's. Besides, I was interested in learning about optimization of logistics problems.
So far I've really liked the lectures and topics and I have no doubt that I made the right decision in choosing this track for my master's.

In the board of 2021/2022 I will be fulfilling the role of secretary and I'm so excited to organise events and activities together with the rest of my group.

You can always contact me!

Ruben Siemerink, Treasurer

penningmeester@transportkunde.nl

My name is Ruben Siemerink and for the upcoming year I will be the treasurer. I started my study Mechanical Engineering at TU Delft in 2017, where in the last 4 years I learned a lot and had a great time working together with other future engineers. I knew then that I wanted the same for my master's degree. I loved designing big machines and there are not a lot of machines bigger than the cranes and other vehicles we look at and work with in this field. That is why I chose Mechanical Engineering with the Multi-Machine Engineering track as my master's.

For the next year it is my responsibility to oversee the budget and make sure there is enough money for our activities. I will also oversee the business tour and make sure we can once again make our activities unforgettable for our students. After the last two years, where not everything was as we all wanted it to be, I hope to bring some new life into Dispuut Transportkunde Pandora and I am looking forward to all the things we can organise this year!

Giovanni Lieuw, External Affairs

extern@transportkunde.nl

I am Giovanni Lieuw and will be this year's Commissioner of External Affairs. In this role, I will be main point of contact between our partners from the industry and Transportkunde Pandora, for the students of our master track. I see having these contacts being very valuable, since the students can have better view of the industry and its companies, which we facilitate through our lunch lectures, company visits and annual Business Tour, but also simply through vacancies for graduation projects and starting engineers.

I was born in Hong Kong, and grew up on Aruba - island part of the Dutch Caribbean. After finishing high school, I came to Delft to pursue my bachelors in Aerospace Engineering. Towards the end of this, I had explored and researched different graduate programs within, as well as outside of aerospace - including MME. After graduating, I was happy to learn that it indeed was very 'doable' to start the Multi-Machine Engineering track halfway the year, last February. Having to start a masters amid a lockdown had its ups and downs, but up to now I am happy with my study progress and the fellow students that I have studied with along the way.
This year, I intend to dive deeper into the different topics within the MME domain, and explore what I like most in this field. Besides this, seeing and getting to know more people is fun, and at times also comes in handy. Furthermore, I look forward to visiting companies, increase collaborations between different groups and parties, and organising some nice activities for fellow students. Especially having lived with the ongoing pandemic for over a year now, I think have a closer student community again is something to long for.

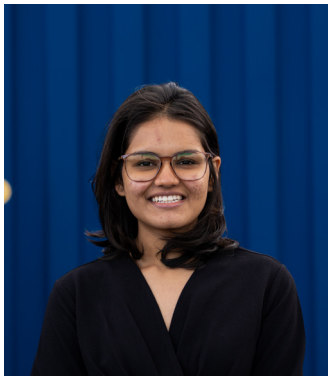
Ashwini Rathi, Education

onderwijs@transportkunde.nl

My name is Ashwini Rathi. I pursued my Bachelor of Aeronautical Engineering from Manipal Institute of Technology, India.

Sustainable, efficient technology is the future. At TU Delft, being one of the UN associates for Sustainable Development Goals, the very principle of sustainable environment comes first. Adopting the natural energy sources, harvesting for a secondary source such as wind, ocean currents is the key thing at TU Delft.
Change is necessary for the revolution and betterment of society. Transportation and logistic operations are key domains where constant change is a necessity for a sustainable future. TU Delft's Multi-machine track provides just the atmosphere for learning the required advanced tools and functions of the logistics and transportation field. This is my motivation to choose MSc Multi-machine at Tu Delft.
Extra-curricular activities have an important impact on developing ones thinking ability. As a Commissioner of Education of Transportkunde Pandora, I will be taking the task of Education evaluation of MME courses. Feedback is necessary to bring possible change. This will indeed help the department as a whole in improving and moving ahead more strongly with greater work impact.

COVID has definitely made a major shift in the process of delivery of education from faculties to the students. Thinking on the brighter side, it has helped everyone to possibly brainstorm with out-of-the-box teaching ideas.
With my role of evaluation, I aim at making the procedure of delivery of these ideas from professors of MME to the fellow Masters students in a more efficient and understanding manner. Always here to listen and help.



A message from..

By: Board 2019/2020

Dear reader,

It is safe to say that our board year did not go as we expected in October 2020. We expected COVID to blow over so that we could get back to organising events as the Pandora board has been doing for years. Sadly, COVID had other plans.

It was a year full of plan B's and postponements; a year full of continuous creativity to find new ways to fulfill the board's tasks; a year where we struggled, but never let go of the drive to keep on trying and a hope for better times. With this mindset we were able to organise an online lunch lecture. We were able to get the students together socially by organising an online pubquiz, an online escape room and a coffee moment between lectures as soon as the measures allowed.

Meanwhile, we took the extra time we gained from having less activities to make some long due changes. For example, we started making better use of the administration of the NetwerkNieuws and we made a large update to the website.

Nearing the end of the board year, we were sad to see two of our board members going off to Portugal to do a part of their master's abroad. With just three of us left on Dutch turf and the possibilities opening up, we had an incredibly busy time organising the introduction days. These two days we saw what an amazing opportunity it was for the oncoming Multi-Machine engineers to get to know the study, the industry and each other. It was very fulfilling to see the difference that these two days can make, but it also filled us with a slight jealousy that we weren't able to have the same opportunity last year.

The cherry on top of our board year was the barbecue at the faculty where we were finally able to get the students and the faculty staff together in one social gathering.

In the end, we are very proud of what we have been able to accomplish in the past year and are especially proud that we, as a board, held on to our drive to keep looking forward. Now it is time that we transfer our tasks to the next board. They form a diverse and enthusiastic group and we believe they have the drive and energy to run Dispuut Transportkunde Pandora in the academic year 2021-2022. They have already shown to be big thinkers who are not afraid to challenge the way things have been done for the past years. We have the fullest confidence in them as a group and as a board.

With these last sentences, we would like to thank everyone that supported us throughout our board year 2020-2021. We know the past year was a tough year for all of us, but now it is time to look forward. We would like to wish the next board the best of luck in the upcoming year.

On behalf of the board,

Gitte Hornung

The old Board

From the Staff

By: Yusong Pang & Mark Duinkerken

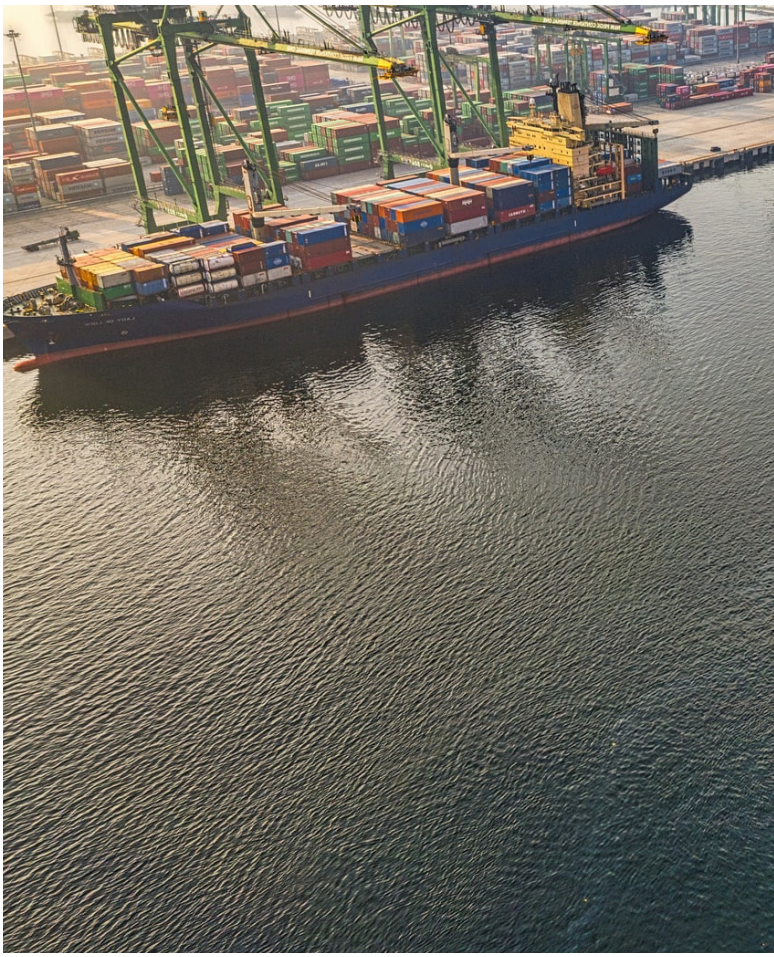
Dear MME & TEL Students, Dear Alumni,

In the past year, we have accumulated a lot of experience with online Multi-Machine Engineering (MME) education, which ensured the high quality of our educational activities and learning process. Immediately after enjoying the summer period this year, the relaxation of the coronavirus restrictions enabled us to move into a post-COVID-19 situation. We were glad to see the opportunities to return back to our normal life, especially on the social side, but this brought us also new challenges in the form of a newly defined hybrid working and education environment. Since the beginning of this academic year, students can experience the transfer from purely online education to partially on campus and staff members has to find new modalities for lecturing, supervision works and organizing meetings in hybrid ways.

Now we are turning into the second quarter of the academic year of 2021-2022, with the unexpected limited lockdown due to the significantly increased corona infection numbers in the past few weeks. Fortunately we are again able to maintain the high level MME education and research in this difficult situation, which can be illustrated by the successful performance of the courses in quarter one and the decent passing rates of exams. Such success does rely on the efforts and mutual understanding of both the MME teachers and the students. Probably this situation will last longer, but the experience and achievement in the past one and half year lead us to believe that we can handle it in a good way.

The challenges of last year prevented us to receive all the responses from students that we normally get during on-campus education. Therefore the role of the study association became even more important. The board of Transportkunde Pandora was very active in providing us with the necessary feedback on our education. They also participated in master information events and organized the introduction for new MME students. Of course we hope for a more normal situation where we can meet with all of the students more often, but in the mean time we are very pleased with all the work by the board and would like to thank them for their efforts last year!

The number of students was gradually growing every year since the master track MME has been established. It is a good sign of the acceptancy of the society and how attractive MME is to students with diverse background as well students from foreign countries. At this moment we need to put in some effort to keep that growth.



We do not know yet how effective the online autumn Master Week was, which was held on 15-18 November, and how the spring Master Event will be organized; but we will keep on advertising MME and attracting students to join MME in the coming period by means of demonstrating our education and research on social medias, TV screens in educational buildings and campus computer monitors. If you have any ideas of spreading MME in any effective ways please let us know.

Another interesting growth of MME is the increasing number of research projects in the area of innovative inland shipping via high level automation, autonomy and cooperation. MME has already pioneered in this research field since quite a few years ago. In the past 2 to 3 years, besides coordinating the large H2020 project "Novel Inland Waterway Transport Concepts for Moving Freight Effectively (NOVIMOVE)", involving 21 project partners of logistics stakeholders, system developers and research organization, MME is also leading and contributing to several noticeable projects.

The INTERREG North Sea project AVATAR aims to develop testing and demonstration of innovative and sustainable transport and logistics solutions to move large volumes of urban freight transport away from long-distance road transport with autonomous and emission-free vessels to achieve a modal shift from road to water; in the H2020 MAGPIE project MME takes the lead in developing concepts for the autonomous loading and unloading of electrically powered autonomous barges; MME contributes to the H2020 project of AUTOBarge towards the European training and research network on Autonomous Barges for Smart Inland Shipping. These projects provide more research positions and topics for MME staff members as well as students. You can find more information on the MME/MTT website.

The size of MME research team is also growing. For the research of autonomous shipping, Province Zuid-Holland has approved the transition of the Researchlab of Autonomous Shipping (RAS) to our faculty of 3mE. To support the RAS, one researcher and one communication assistant have been appointed and the recruitment of one technician is in process. In addition, the current running projects provide multiple postdoc positions for the coming years. Moreover, MME has announced a new vacancy for a new assistant professor of Interconnected System for Smart Industry. In the coming period, we look for candidates have a fascination for Industry 4.0/5.0 concepts and logistics-enhancing methods in rapidly developing environments with high levels of digitization, modularization, and robotics, who would like to pursue research in large-scale, multi-machine, systems-of-systems perspective.

We would like to conclude that the performance and development of MME is impressive in this difficult time. The effects of COVID-19 will exist and probably last longer. Anyhow, we are able to work together either virtually or physically and at least now we have the chances to meet each other in real life. The future looks bright.

Yusong Pang & Mark Duinkerken

Meet Anouk

By: Noor Wilking

Although Anouk de Goede- Oosterhoff has been assisting the master coordinator of MME since May 2021, she deserves a proper introduction in the NetwerkNieuws!

Besides being the assistant of the master coordinator of MME, she also fulfils this role for the Master of Marine Technology. In total, she takes care of approximately 400 students!

The students can contact her for study-related questions, but really for everything you need to get off your chest!

Together with the master coordinators of the first and second year of MME, Mark Duinkerken and Xiaoli Jiang respectively, Anouk is responsible for the mailbox of mastercoordinator-MME@tudelft.nl. She reads the incoming e-mails, answers them herself, or forwards them to Mark or Xiaoli, so every e-mail is attended to and taken care of properly.

Anouk's career

When Anouk was nineteen years old, she started working as an administrator at a furniture factory. Here, she learned a lot and gained much experience. After this, she went to London to become a nanny. Next, Anouk had various jobs at a global organizational consultancy firm, a Swedish telephone provider, and Deltares, formerly known as the Waterloopkundig Laboratorium.

She has also worked at ITC, a department of the University Twente, a health insurance company, and at the municipality of Berkel en Rodenrijs.

Her career at the TU Delft began in 2006 when she started working at the Department of Biomechanical Engineering. She started in 2015 at the Maritime & Transport Technology department where she first worked for the section Offshore & Dredging Engineering. She then became the department secretary and moved on to the section of Ship Design Production and Operation.

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Activities

By: Kroen Kruimer & Noor Wilking

As the corona measures started to become more flexible during last year, we were finally able to continue organizing real life activities. Here is a summary of all organized activities in the last six months.

Lunch Lecture Krohne and Eurosilo

Nearing the academic year, it was finally possible to organise on campus lunch lectures again. In June Krohne visited us at Pulse, the new state of the art lecture facility at TU Delft, to tell us all about their activities in the measuring industry, as well as their goal to make their operations completely paperless in the future.. A week later Eurosilo joined us at this location as well to give us a presentation on their latest projects and innovations in the industry of bulk storage facilities.

Coffee moment

At the start of May Pandora organised a coffee moment in one of the lecture halls, before the start of a lecture. As this was one of the first lectures held on campus since the start of the Pandemic, students finally got the chance to socialize with each other again in real life after only seeing each others' faces on computer screens for many months. It was a nice small get-together in which the students could share their stories before class, ensuring they could pay attention to the lecture afterwards!

End of year drinks in Delftse Hout

To celebrate the end of last academic year Pandora organised a small get-together for first year students. After the last exams we gathered at Delftse Hout to have some beers and pizzas and even a little football match, before everyone scattered away again for their vacations.

MME Introduction days

In the first academic week we kicked off the year with the introduction days. Over the course of two days some fun and educational activities were organised, attended by over 40 new first year Multi-Machine Engineering students.

On Thursday afternoon of the first academic week the students were welcomed to 3mE, where the Multi-Machine Engineering track coordinators gave interesting and informative presentations on the study programme. Afterwards, the group went straight to Rotterdam. Here, they had a chance to get to know each other and have dinner together. We continued the evening with all students at NRC Cafe, where Nemag joined us to host a pubquiz. While having a beer the students formed groups to tackle all questions about Nemag's grabs and the transport industry. To close the night Wouter van den Bos joined the group as well, hosting his classic pubquiz, filled with crane and career related questions. Both quizzes were enjoyed immensely by the participants!

Friday the students were split into two groups for the remainder of the introduction activities. Alternately the groups sailed on a Spido tour through the port of Rotterdam, seeing huge ship to shore cranes in live action, and went on a visit to Huisman in Schiedam. Huisman prepared presentations for the students, introducing them to Huisman's field of expertise and some interesting ongoing projects. After the presentations, the students were taken on a tour through the production facilities to see their massive cranes being built. The visit was closed with a lunch at Huisman for the morning group, and a VrijMiBo for the afternoon group.

Wouter's pubquiz at Introduction Days

New year BBQ

At the start of October, as the final activity of last year's board, Pandora hosted a BBQ at het Lagerhuysch for all Multi-Machine Engineering students, as well as the teachers and staff. With almost fifty applicants it was the most visited event of the entire academic year. As everyone gathered inside for the introduction of the new Pandora board, a small fire took over the barbecue, putting an early stop to the burger and sausage supply. Luckily though, there was enough beer to go around, so the party wasn't completely halted after all.

Business Tour Committee

In order to get closer together as a board, we played a game of padel to impress each other with our sports skills.

In the meantime the new BTC was trying to solve a puzzle to find out at which location they would meet us. Luckily they arrived just in time so we could all drink a beer together and get to know each other. You can read more about this year's BTC on page 23.

Lunch lecture Mieloo & Alexander

In the beginning of December we were visited by two former TEL students from Mieloo & Alexander (M&A) who lectured forty MME students about their company. They explained the main goal of M&A is to add information to a process in order to optimize it.

One of the techniques they use is RFID technology to track the locations of products for different clients. For example M&A was able to raise the inventory accuracy of a leading fashion retailer by using RFID tags on its products. Besides, M&A uses RFID stickers to keep track of spare parts in a warehouse of a car manufacturer.

Furthermore, it was said how a day of a Business & Technology consultant at M&A looks like and what skills are used for this job. In conclusion, it was an interesting lecture and we hope to visit M&A later this year!

Puzzles

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Jorrit Sijtsma

Start-up Luce

By Gabriele Ansaldo & Nicolas Dann Ruiz

Photo: Gabriele Ansaldo

Photo: Nicolas Dann Ruiz

Here are Gabriele Ansaldo and Nicolas Dann Ruiz, two second year MME students. We both graduated from the University of Groningen with a bachelor's degree in Industrial Engineering and Management. We are passionate students who like combining the world of engineering with the one of business, and our focus is especially on innovations towards a greener environment. Our love for the outdoors led to a great determination in making contributions towards the environment we live in.

In October 2020, we first started outlining and working on our startup idea. But what is this startup all about?

The Startup: Luce

The environmental impact we have on the planet is often uncertain. Despite our commitment to living a sustainable life, currently there is no way to collect data on our environmental impact or, more importantly, the quality of the environment in which we live. As a company, Luce designs and develops IoT devices meant to enhance people's lives and create awareness about the environmental conditions they live in - bringing important information to light. In particular, Luce develops energy consumption, air quality, water usage, and plant monitoring devices.

Our vision is to connect to the world around us through technology and to encourage change. We believe that the only way for people to comprehend the environmental crisis is for them to see direct data of their surroundings. This will inevitably increase awareness, which will, in turn, lead to positive change.

Our Journey

It was thanks to the course 'Ready To Startup' that we came up with our idea and first started developing it. This course was helpful in guiding our business model approach. In particular, it taught us how to build a solid business strategy, from prototyping to financial planning.

After completing the course, we decided to keep pursuing our idea and signed up for the biggest student entrepreneurship award in the Netherlands: **THE PHILIPS INNOVATION AWARD**!

We gave it all our best and made it to the semifinals of the competition, an incredibly exciting experience as we had the chance to pitch our startup in front of potential investors and an intimidating camera crew.

What have we learned?

Unfortunately, we decided to stop pursuing our startup due to us moving abroad to carry out our graduation projects. However, this hands-on opportunity has taught us invaluable skills that could only be attained from creating and developing an idea from scratch. We therefore encourage anyone to take on this excellent opportunity, as we can both agree that the experience of pursuing your own idea is a dream come true.

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Introducing: BTC

By BTC 2021/2022

The new Business Tour Committee is here! Just like the previous years this group of students will organize a Business Tour to a foreign country. The goal of this tour is to broaden the knowledge of the students by becoming acquainted with different corporate cultures. The skills that the students are taught at the Delft University of Technology are very extensive, but focused on the common European industry. A combination of the skills learned at the TU Delft and the experience gained in the corporate world can create a course for our students that grants a more improved and innovative way of thinking and solving. This could be beneficial for the students as well as for the business world, that will welcome these students within a couple of years.

Business Tour Committee

During this trip the students will visit companies to attend presentations, tours and cases. Besides that, attention is paid to the cultural and social activities to create a well suited combination of professionalism and relaxation. Overall it can be concluded that the Business Tour is an essential part of the development of the students of the master Mechanical Engineering, track Multi-Machine Engineering.

Pietro Trevisan - Chairman

Hello everybody, my name is Pietro Trevisan and I am a first-year MME master's student from Italy. I decided to start this study path because I have always been interested in the concept of Multi-Machines and everything that is behind it, from their design to their applications and integration with other systems.

In my free time, I like to do sports or simply enjoy my time by spending it with some friends, either getting drinks or doing some other fun activities together.

I am the chairman of this year's Business Tour Committee and I hope that we can give all of the interested MME students the opportunity to go on a fun, useful, interesting, and, last but not least, cheap trip. I hope that covid will not stop us this year and that the people who enrolled for last year will be able to join us in this adventure and finally enjoy their Business Tour.

I decided to join the committee to expand my knowledge of the Multi-Machine field alongside my connections to companies that work in it, which I believe everyone can do by joining the trip. Also, I believe it is a great opportunity for everyone to visit a foreign country that would normally be a little too expensive to go to for a simple vacation and, finally, I think it is a nice way to see the country not only on a fun-level but also on a more educational one.

Aravind Ramesh - Secretary

Hello everyone, my name is Aravind Ramesh and I'm a second year MME master's student from India. Large engineering and transport equipment, as well as latest smart technologies like artificial intelligence to integrate them with other equipment that they interact with, have always piqued my interest.

Apart from academics, I passionately follow sports especially Formula 1 and football and also enjoy playing some sports. I also enjoy hanging out with friends and I love to engage in some fun activities with them.

I am the secretary of this year's Business Tour committee and together with my board we want to organize a fun, adventurous, informative and affordable trip to an exotic country to MME students who are interested. We are optimistic this year that COVID-19 will not spoil our plans and all the people who enroll will have a memorable time.

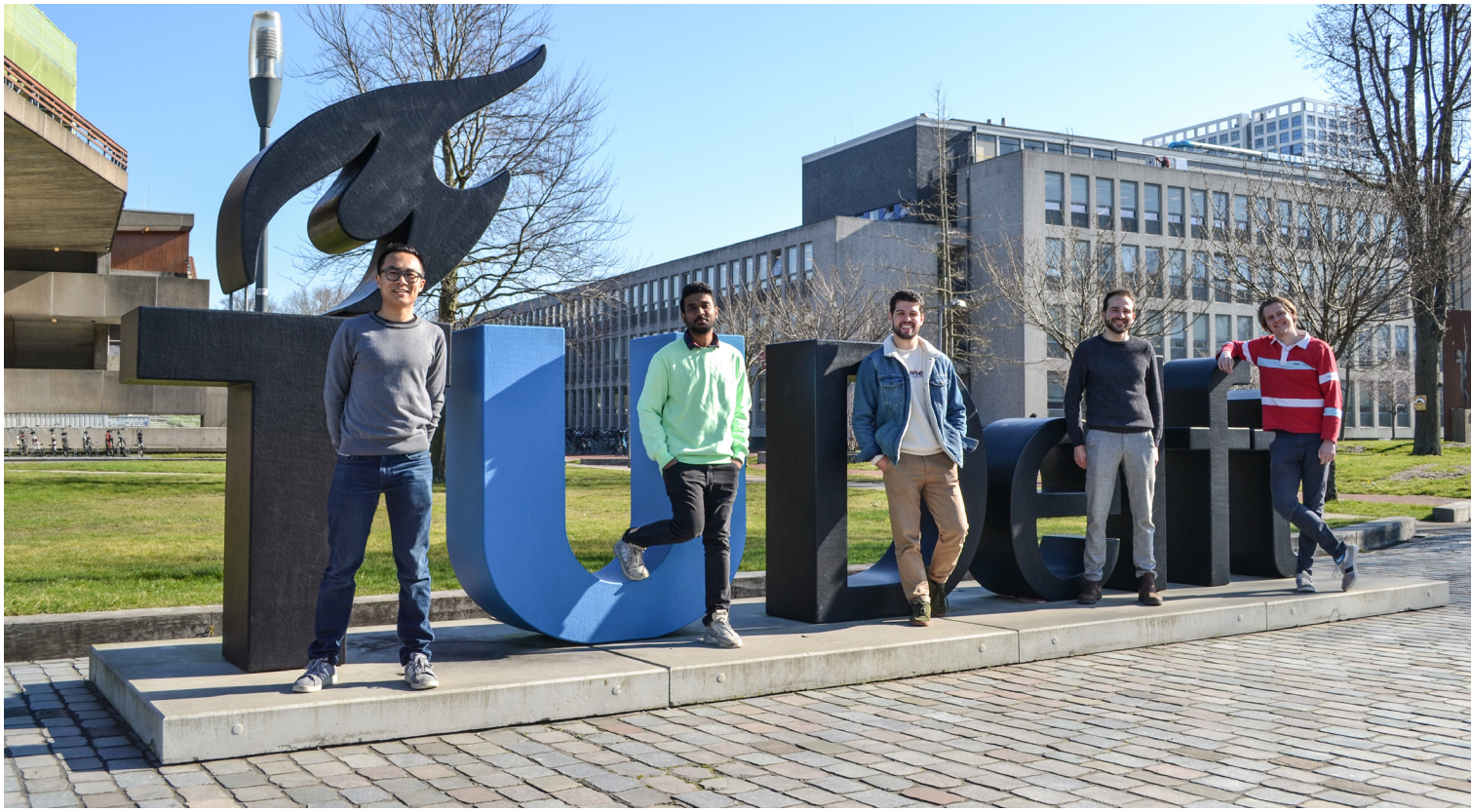
I decided to join the Business Tour Committee not just because I enjoy travelling but also to make useful connections with foreign companies who are really into my field of study. I also believe that spending time with different people and exploring a foreign country with them would be a great life experience.

Pedro Correia - Treasurer

Hi, my name is Pedro Correia. I am originally from Portugal, but I recently moved to Delft to pursue my master's degree in MME.

I will be the treasurer for this year's BTC, I will make sure that we actually have enough money to go and come back! I decided to join the committee because I feel it is important to help make everyone's experience even better in the time we spend together at TUDelft. Furthermore, I believe that I will develop my soft skills further, doing something that interests me.

A bit about myself, I like to be active and do all kinds of sports. Whenever I am free I like to grab a beer with my friends or go and visit new places.



D:Dreamteam Epoch

By Kerem Baryraktar, Operations Team Epoch

Who are we?

Hello! We are Team Epoch, a DreamTeam of TU Delft focused on artificial intelligence (AI). Our aim is to compete in online AI competitions all around the world in order to develop state-of-the-art solutions for various problems. We want to pave an accessible path forward into what we believe will be the most disrupting field of innovation in the near and distant future. Our team currently consists of 25 motivated students with different study backgrounds and skills ranging from Computer Science to Technology, Policy and Management. In addition to participating in competitions, we also aim to have a positive impact on our society to show that AI can be an important tool in a variety of fields. We hope to achieve this by involving and educating as many people as possible through the knowledge of our skilled AI engineers.

What do we do/AI Competitions?

The AI competitions that we compete in use concepts that are widely used in the field of data science, but have various applications through different problems. The idea of these competitions is that as long as you have access to a computer and the internet, you can participate in the competition. The problems that we aim to solve through these competitions mostly have a guideline for the solution that already exists, called the ''baseline". The goals of the competitions are to surpass the baseline and build a better performing model. We aim to preserve a level of diversity for the range of competitions' disciplines in order to show that AI is more than a tool only specialised for computer science/data science.

We think that AI can be very practical for our everyday problems without allocating too much resources and we think that this can be displayed through the variety of competitions we participate in.

Application of AI to Transportation

As an example for its application, AI's use in transportation is gaining more importance with the vast amount of data that is ready to use and the high reliance on technology in this field.

According to the European Parliamentary Research Service, road transport is one of the sectors where AI was successfully applied with technologies ranging from automated vehicles and vehicle technologies for personal transportation (e.g. automated parking through input signals) to truck coupling of heavy goods vehicles. Not only limited to the transportation itself, but AI can also be used in logistics on issues originating from traffic congestion and traffic flow as well as improve the road security with systems based structure through effective use of data.

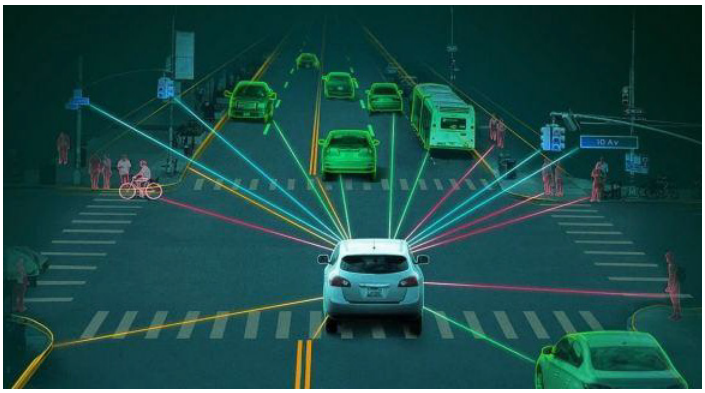
Although there is room to improve especially on the ethical discussions that arise with replacing human intelligence for situations where improvisation might be needed, AI provides an impressive and promising field of research for various problems in this sector.

Our own experience through the Flatland Competition

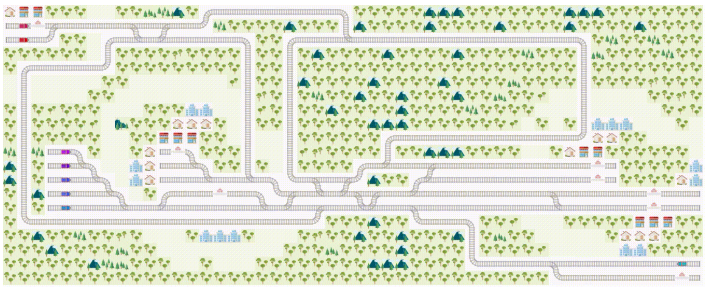
As one of Team Epoch's first competitions, Flatland Competition is a great example for how AI competitions can help to push the development of better solutions. The competition's goal was to come up with improvements on the solution for

the Vehicle Rescheduling Problem, which is a key issue with many of the transportation and logistics companies (just like the host of the competition, Swiss Federal Railways). As it's proved to be a NP-Complete problem, which means that it's very difficult to reach an optimal solution with our current understanding of algorithms, heuristic approaches are used for "acceptably good" solutions.

Therefore, AI can bring a lot to the table especially with deep learning that emphasises on the continuous learning process based on the data of previous attempts. The competition provides a 2D grid environment that simulates a railway system with infrastructure changes, schedule adaptations and varying levels of traffic flow to test the competitors' submitted algorithms. This way, a complex railway system can be "realised" in a virtual environment



without much use of resources but the efficiency of the submitted solutions performance could be tested in an appropriate manner. Our team's solution was built on a reinforcement learning structure that rewards good behaviour (reaching stations on time) and punishes bad behaviour (such as getting stuck behind another train) with varying specifications. In addition to this, the grid was restructured as a graph in order to apply useful algorithms such as Dijkstra's shortest path algorithm for each of the trains to create their respective routes. Not only limited to a static algorithm, but the solution also included some adjustments that depended on uncontrolled changes within the system such as train malfunctions or train collisions so that it can react accordingly to recalculate. In the end, our team finished in first place with their submission!



To conclude, we believe that AI can prove to be a very valuable tool for a better utilisation of technology in various domains. Through AI and AI competitions, AI is much more reachable to an average person as long as they can allocate enough time and knowledge. Thus, a wider array of solutions can be created for known obstacles in our society to push it forward.

If you'd like to learn more about how AI can help us pave the future you can follow our website www.teamepoch.net and/or contact us directly for any questions you have!

Internship at Nemag

By Jelte Nieuwenhuis

My name is Jelte Nieuwenhuis. I am currently in the second year of my master's Mechanical Engineering in Delft and just about to start my literature review. Before my master's program I studied a bachelor mechanical engineering, in Delft as well. For the first quarter of my second-year program, I conducted an internship at the Engineering department of Nemag, a manufacturer of large grabs in Zierikzee.

The internship

I was interested in conducting my internship at Nemag for multiple reasons. The first is that Nemag is a relatively small scale, family-owned company. This meant that even in my short, corona-stricken three months at Nemag I felt very welcome and part of the team.

Another factor was the fact that even with a product that at first glance is so straightforward, Nemag grabs outperform their competitors' products. The level of optimization in their products was something that drew my attention.

The projects

During my internship I worked on multiple separate projects. The first project I worked on was on the development of a lubrication system for grabs. This system has the potential to increase the service interval of a grab and thereby increasing the efficiency of the entire system.

The part I redesigned is shown in the center

Testing the assembled prototype

My role in this project was twofold. I redesigned a part of the system through the methods taught at TU Delft, and was later asked if I would like to build the current prototype. Having minimal experience with the construction of hydraulic systems, I enjoyed figuring out how to assemble the system.

Installing the prototype on a grab

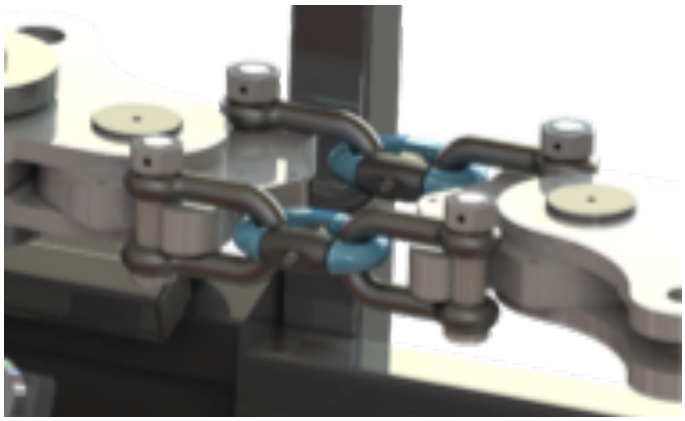
The second project I worked on was designing a method to make the certification of quick release shackles faster. These shackles can be used to quickly connect grabs to the ropes, and are often used in other lifting scenarios.

In order to guarantee quality and performance of the shackles, each individual shackle is tensile tested. If the shackle passing this test, it is given a certification. The aim of my assignment was to make the entire process faster and more importantly reducing the physical load on the operator. Since this research was a standalone project it meant that the assignment was still entirely open and very hands-on.

The project began because Jan, who operates the tensile tester, indicated that the current process is not up to par.

We spoke about how the tests are currently executed and what the main drawbacks of this method are. He explained that the current process is slow and inefficient, but more importantly very strenuous. He explained that the testing of other certified parts is far better optimized, further highlighting the inefficiencies. We then did test runs to give us an indication of the time consumption by each step of the process.

The project started from there, using Solidworks and multiple discussions with multiple people from the engineering department about what would and what would not work, a design was realized. This design was approved and is currently on order.



The result

The company

The fact that Nemag is a relatively small family-owned business rather than a large multinational was noticeable in many aspects of the internship. The welcoming environment is the first thing that stands out. This feeling began on the first day, when I was personally introduced to everyone that works at Nemag.

Even though there are various departments focused on different aspects of the company, everyone is working towards a common goal – making the best version of their product. This second aspect was especially noticeable when I went around the factory

asking questions about the workflow and how this could be improved in their eyes. I went back and forth between the departments with the things I had since learned. Each time I would be greeted with even more enthusiasm than before.

Nemag vs TU Delft

The biggest difference between the assignments at the TU Delft and Nemag was the goal of the project. At TU Delft the goal of an assignment is to teach you valuable lessons about the respective subject. At Nemag the experience was very different, especially with Jan's request. In this case the goal of the project was to make Jan's job less physically demanding and more enjoyable.

The conversation we had after the design was finalized, production began and seeing how glad he was with the end result was the best moment of the internship.

The other assignments were focused on actually achieving a goal, whether this was to make a workflow more effective or save weight and reduce cost. The goal of the project being more than a grade or a competition was something I enjoyed a lot. Another thing I really enjoyed was the cooperation with my colleagues. During the internship I was welcome to figure everything out by myself but if I felt like I needed guidance or feedback, I could ask anyone around me.

The last thing was the difference in design strategy between the TU Delft and Nemag. The TU Delft often focuses on what the optimal design is to tackle a problem. At Nemag the focus is on finding the simplest yet effective solution.

Expectations

In general the internship was as I had expected. The assignments which I took on were varied and challenging. I was pleasantly surprised by the informality of the workspace. Even though everyone works hard, there is almost always room for a friendly chat.

However, certain things surprised me over the course of the internship.

One thing that surprised me, and which has since become a bit of a quote, was "I thought I knew how to use Solidworks". I could spend 20 minutes drawing something, and then Hans, a colleague from the engineering department, would pull up alongside me and draw the same thing in 45 seconds.

Another thing that surprised me was the level of optimization of the grabs. I was under the impression that grab design would be based on the type of material that is being transported. However, as usual, the real answer is much more complicated. The level of grab design at Nemag is such that even the specific properties of a certain bulk material are taken into account. The design for an iron ore grab for Shanghai is different from one for Chili.

Puzzle Answers

9	7	5	8	4	6	1	2	3
3	1	8	7	9	2	4	6	5
6	4	2	5	3	1	9	7	8
5	8	7	6	1	3	2	4	9
2	6	3	4	7	9	5	8	1
1	9	4	2	5	8	6	3	7
7	2	6	9	8	5	3	1	4
8	3	9	1	2	4	7	5	6
4	5	1	3	6	7	8	9	2

LEVEL ☆

5	9	7	1	6	3	4	8	2
1	6	8	2	9	4	5	3	7
4	3	2	5	7	8	1	6	9
9	8	6	7	4	2	3	5	1
7	5	4	3	1	9	8	2	6
3	2	1	6	8	5	7	9	4
6	1	9	8	3	7	2	4	5
2	7	3	4	5	6	9	1	8
8	4	5	9	2	1	6	7	3

LEVEL ☆☆☆

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We hope you enjoyed reading this edition of the NetwerkNieuws. To make sure that everybody has their preferred reading experience, we are in the process of fine-tuning our readers' NetwerkNieuws preferences. Do you no longer want to receive the NetwerkNieuws? Would you rather receive the magazine digitally? Or would you like to communicate a change of address? You can send an email to our secretary Noor at info@transportkunde.nl. You can also consider registering for the new alumniportal of Delft University of Technology, TU Delft for Life, at www.tudelftforlife.nl. Here you can change your address and you can receive updates on events and the latest information for alumni.

We already look forward to sending you our next edition of NetwerkNieuws in summer.

Dispuut Transportkunde Pandora board 2021-2022,

Noémi, Noor, Ruben, Giovanni, Ashwini

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