# Technolog [EEE

# Invented by Johannes Gutenberg Edition 2021-2022





## **Dear reader**

Welcome on the first pages but also in the first edition of *TechnologIEEE*, a magazine published by IEEE Student Branch KU Leuven Campus Brugge. We are a student association that involves students, researchers and academic staff studying or working in Electronics, ICT or Energy.

If you already attended one of our events you know I always start with a welcome and an introduction, and even on paper I'm going to follow this structure. I already welcomed you, so here comes the introduction. The events we organize have the goal to educate our target audience and offer them a place where they all can meet. All the events have the main goal to create a well-connected community at our campus. With this magazine we want to show you our achievements, give you a keepsake to this academic year (2021 – 2022), and let you 'enjoy' the study and exam period. On the next page, you can find the content table, you can read yourself, what saves me some space to write about other things in this Welcome and Introduction.

This Welcome and Introduction is my last public 'appearance' as Chair of our IEEE Student Branch KU Leuven Campus Brugge. I say 'our' Student Branch because it's more than some officers that organize events, we are also a community. A community, where you are part of, and we are proud to have you on board as attendee of our events, supporter, involver or whatever you mean to our community. Our Student Branch officially exist since August 8<sup>th</sup>, 2021 at 19:48:32, but we already grew to the biggest technical community of Bruges. And I can ensure without you it wouldn't be possible.

This magazine and our Student Branch couldn't exist without some important people, they absolutely need to receive our sign of appreciation.

First of all, I would like to thank the currently unknown students: Zoë, Mathis Lander and Paulien, these wonderful students have given up some assignments to create some content for this magazine you're now holding. As every flock need its shepherd, a group of students is nothing without the guiding of their teacher, we also express our thanks to Natascha Coene, who accepted our request and implemented this magazine creation into her course. Please discover the students behind this magazine at page 46.

Also, the initiative 'Samen Zijn' of our campus, better known by its mascot Daan de Zwaan, was an important sparkle that made our IEEE Student Branch something real. Especially the efforts of prof. Hans Hallez, who searched and found passionate Officers to take a position in the organization. Thank you!

IEEE and IEEE BeNeLux Section, thank you for the guidance and support to become an official Student Branch. A special thanks to Lieneke Kusters and Valentijn De Smedt, who helped us actively to overcome all issues.

Another thanks to our sponsors: TREMEC, CDC Automatisatie, Duco, PsiControl and Televic. The trust you gave us, a starting association, is very important to reach the desired outcome with this Student Branch.

At least I want to thank the Officers and other members of the Executive Committee. Although you find them on the next page, I will mention them here by name:

Officers: Benjamin Zyde, Pavithrakrishnan Radhakrishnan, Arne Maes, Gregory De Ruyter Supporting members: Kobe Vierbergen, Karel Debedts.

It was a pleasure for us to see so many students, researchers and faculty staff joining our events and participating in other things we did. I hope to see all of you back on one of the upcoming events and for that I want to congratulate the new executive committee. You're going to do great things!

Martijn Dendooven

Chair IEEE Student Branch KU Leuven Campus Brugge

# What's inside?

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Your daily motivation



#### Martijn DENDOOVEN

Yes, you can call me Martijn, you don't need to say Chair or Mr. Dendooven. Chair is just the name of the position I fulfill in IEEE Student Branch KU Leuven Campus Brugge, however I'm also a student graduating in Electronics Engineering. I'm always open to new opportunities, which is why I joined this IEEE Student Branch. Besides my life on the KU Leuven Campus in Bruges, I'm fascinated by innovative consumer electronics, with a small preference for Microsoft products. Most of the time you can find me with one or more Microsoft devices, except when I'm running or swimming.

#### **Benjamin ZYDE**

**VICE-CHAIR** 

SECRETARY

**CHAIR** 



#### Pavithrakrishnan RADHAKRISHNAN

Hello all, Greetings! At present, I'm doing my Ph.D. degree in electrical engineering specialization in EMC (Electromagnetic Compatibility) at KU Leuven Campus Brugge, Bruges, Belgium. In 2014 I received a B.E degree in Electrical and Electronics Engineering from Anna University, Chennai, India and an M.S. degree in electronic embedded systems from ESIGELEC, Rouen, France, in 2018. From 2019 to 2020, I have been working as a hardware development engineer with Magna electronics Gmbh, Sailauf, Germany towards the BMW-ADCAM project.

#### TREASURER



#### Arne Maes

I am Arne Maes and I function as Treasurer for IEEE Student Branch KU Leuven Campus Brugge. This year I am graduating as an Industrial Engineer electronics-ICT, specialization ICT. Outside of IEEE my hobbies include having a drink with my friends, gaming, 3D-printing and climbing.



#### **Gregory DE RUYTER**

## WEBMASTER & PUBLICITY

I'm a last year student Engineering Technology who is interested in everything that has to do with ICT and science. In my spare time, I like to ride my bike or do a walk while enjoying nature. I also play the guitar and therefore, it is hard to imagine a life without music. Engaging myself and helping other people really makes me feel happy.



#### Kobe VIERBERGEN

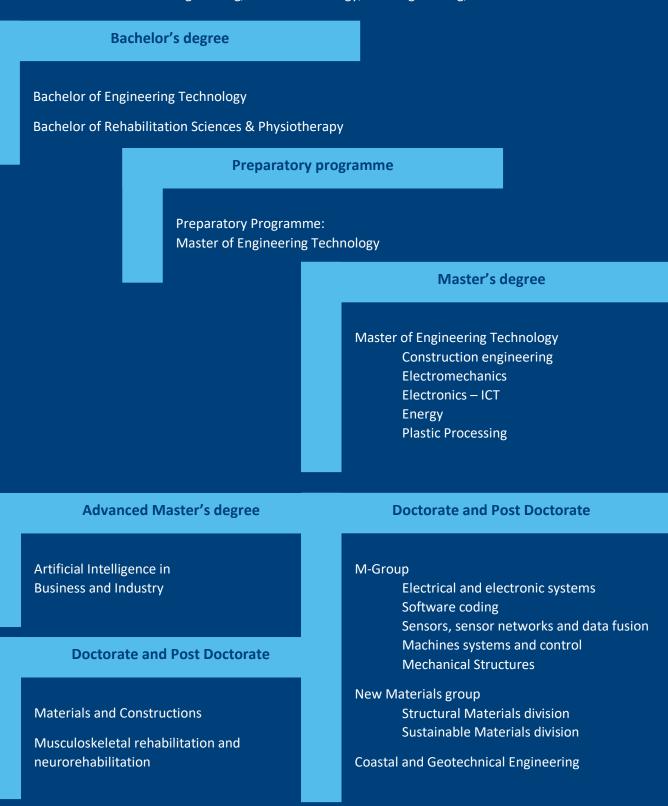
#### PUBLICITY

Good day! I am Kobe Vierbergen and my position this year in the IEEE Student Branch was Publicity. I am in my preparatory programme towards master energy. Before, I studied energy management in Antwerp at the AP University of Applied Sciences. In my free time, I try to do as many sports as possible such as running, swimming, cycling, hiking ...



# **Our KU Leuven Campus**

The following courses are followed at the KU Leuven Bruges campus, Belgium. We focus from under graduation level to post-doctoral level covering variety of disciplines such as Information Technology, Electronics and Electrical Engineering, Renewable Energy, Civil Engineering, and Rehabilitation Sciences.



# Department of Computer Science

The Department of Computer Science (CS) is an indispensable section of the Faculty of Engineering Technology at KU Leuven Bruges Campus. In Bruges Campus, CS is a part of M-Group together with the Department of Electrical Engineering (ESAT) and the Department of Mechanical Engineering (WTK). In M-Group, CS comprises two research groups, which are Distributed and Secure Software (DistriNet) and Declarative Languages and Artificial Intelligence (DTAI). They are active in research on Information and Communication Technologies (ICT) security, software engineering, distributed systems, declarative languages, machine learning, knowledge representation, etc. DistriNet is a true pioneer for the internet in Belgium, and an authority in software security, while DTAI is a key research group in artificial intelligence.

Three professors are leading the research group of CS at Bruges Campus. They are Prof. Jeroen Boydens and Prof. Hans Hallez from DistriNet, and Prof. Mathias Verbeke from DTAI. The research group includes three postdocs, Dr. Jens Vankeirsbilck, Dr. Keivan Shariatmadar, and Dr. Paul Monferran. They are mostly assisting professors with project planning, and group management, while also chasing their academic objectives. Under the guidance and supervision of professors and postdocs, more than 25 PhD researchers are exploring the mysteries of science and pursuing higher scientific achievements. Their research includes both fundamental and applied research in diverse fields, e.g., communication, automotive, medical, and health care. Besides that, the CS research group always pays attention to the valorization of their research in the real world, such as applications in an industrial context.



# Department of Electrical Engineering

Department of Electrical Engineering (ESAT) – WaveCore is a part of research-based M-group of KU Leuven Bruges campus which primary focus on safe, reliable, energy efficient performance of modern electronics and electrical systems which is applicable in various domain such as medical, automotive, health care, mechatronics, IoT, etc. With the advancement of electronics in these areas, electronic circuits are working in harsh environment conditions with intentional and unintentional electromagnetic interference with reliability and performance getting affected.

WaveCore at Bruges campus focus on Risk based EMC (Electromagnetic Compatibility) both at the hardware and software level. The Flanders Mechatronics Electronics Centre (FMEC) Laboratory is the service lab of M -group which do the pre-compliance EMC test and reliability testing of electronics products. This research group is led by Prof. dr. ir. Davy Pissoort. WaveCore emphasis on following topics but not limited to EMC Hardening techniques like Shielding, EMC, Fault-tolerant and fail-operational hardware design and Risk-and-Hazard Analysis and Management.

Under the supervision of D. Pissoort nearly more than 15 PhD students are working under the domain of EMC/EMI which includes SAS, PETER, ETERNITY projects from EU Commission. Also, on regular basis seminar, plenary lectures are organized within the group by the renowned speakers.



# **Overview of 2021 – 2022**



# Let's Meet



8



# **Workshop Azure**

# **Thesis Fair**

# **Movie Night**

# **for Charity**









# Challenges in Smart Cities

# Let's Meet Agoria Solar Team

# **TREMEC Event**



## Let's Meet

October 12th ① 18:15 - 20:30
 Spoorwegstraat 12, Bruges - Room 06.50

Speakers
Jens Vankeirsbilck
Chandu Kancharla

🕤 Drinks included

**I** Free entry

🐣 Excl. for EO, ICT & EN

**ATTENDEES** 

57

The first event we organized was *Let's Meet* with the purpose to connect with fellow students, researchers and faculty staff. This event happened at our campus on October 12, 2021. Awareness about IEEE and IEEE Student Branch was given to the target audience including bachelor, masters, PhD students and faculty staff. Post-doctoral researcher Dr. ing. Jens Vankeirsbilck and Doctoral researcher Mr. Chandu Kancharla from our campus gave an insight of what's happening at our campus in terms of M-Group research. We were so glad to see the enormous number of audiences during our first event. The meeting concluded with snacks and drinks.

## TARGET

All Students Electronics, ICT, Energy Faculty Staff

SPEAKERS

Martijn Dendooven (Chair)

Jens Vankeirsbilck (Post-doctoral Researcher)

> Chandu Kancharla (PhD Researcher)



# Seminar on "EMC response to climate emergency"

Prof. Alistair Duffy De Montfort University Leicester, UK

Date: 22<sup>nd</sup> October 2021 Time: 9h - 10h Room no: 06.70 Venue: KU Leuven Bruges Campus

Prof. Alistair Duffy from the UK visited our campus and gave a seminar on *EMC* response to Climate emergency to all the doctoral researchers of KU Leuven Bruges Campus on October 22, 2021. It was quite interesting to see and think about EMC with present global issues. The main focus of the talk was to advice the need of EMC engineers to think about the issue of climate emergency and make effort to reduce the contribution from individuals and also from the society. He explained with several practical examples how these problems co be tackled by EMC, SI, and PI engineers. To finish, Prof. Duffy also had a meeting with the local IEEE Student Branch officers and fostered them to the best how they could manage the branch in a better way with few tips and tricks.

TARGET PhD Students Faculty Staff ATTENDEES

20

Alistair Duffy (IEEE EMC Society)

**SPEAKERS** 





Microsoft

## **Workshop Azure**

Spoorwegstraat 12, Bruges – Room 03.01

Notice
 Possibility to earn a certificate from Microsoft

**Tee entry, registration on edu.ieee.org/be-kulbrugge** 

On October 26, 2021 we organized a workshop about Microsoft's cloud platform Azure for the benefits of all bachelors, masters, PhD students and staff to make something new, to train new skills. This workshop was given by a specialist in the platform and afterwards the participants could register for an exam to obtain a certificate from Microsoft. Mr. Casper Naudts also gave the workshop tutorial on Azure covering fundamentals till the technical aspects. It was very insightful for the audience to learn the modern technology which could benefit them for their career. We hope this workshop would create the foundation base for the researchers and graduate students.

### TARGET

All Students Electronics, ICT, Energy Faculty Staff 52

**ATTENDEES** 

SPEAKERS

Martijn Dendooven (Chair)

Casper Naudts (EDU-TECH)



# **Thesis Fair**

🗂 March 1

· 18:45

Spoorwegstraat 12, Bruges – Room 03.01

- **DES** Free, registration not requiredg
- For students electromechanics, electronics, ICT en energy

The Thesis Fair was organized for bachelor graduate students at our campus on March 1, 2022. The representatives of our sponsors joined the event and introduced themselves to the students. They also explain the ongoing research at their companies and gave proposals of master's theses available at their company. It was nice to see the latest technology incorporated at the industries but not limited to AI, machine learning, automation techniques, etc. As example TREMEC proposed theses topics on the development and research related to the automotive conventional, hybrid and BEV vehicles. After the introduction part, students had a deep discussion to the corresponding representative of other companies, get more inputs and shared their contacts. Finally, the day was capped off with a nice drink.

## TARGET

All Students Electronics, ICT, Energy Faculty Staff

> TREMEC, Televic, CNH, VLIZ, Sofics, Van Marcke, e-BO Enterprise

## ATTENDEES

55

SPEAKERS

Martijn Dendooven (Chair)

Richard Ballaux (TREMEC)

Steven Lauwereins (Televic)





## March 9<sup>th</sup> – doors open 18h30 – KU Leuven Campus Brugge

# Movie Night for Charity

#### Help the Ukrainian children – tickets on edu.ieee.org/be-kulbrugge

The conflict in Ukraine affects us all deeply and it is still hard to imagine that this terrible situation is a reality. Many families are forced to leave everything behind, are separated from each other and are fleeing from the increasing violence. Innocent children are particularly hard hit. 7,5 million children are in danger and the right to a safe environment, education and free time are taken away from them. As a student association, we give immense importance to these rights and want to show our support by donating the proceeds of the Movie Night to 12-12. The funds are used to donate food, medical material and psychological help to the victims of the crisis in Ukraine. We have invited all the students and staff from the campus. For 5 euros they could enjoy *The Internship*, popcorn and a drink.

**TARGET** All Students Faculty Staff ATTENDEES

24

PROCEEDS

€200





# Workshop Docker & Kubernetes

March 23th ① 19:00 - 20:30
 Spoorwegstraat 12, Bruges - Room 06.01

**TES** Free entry, registration on edu.ieee.org/be-kulbrugge

Another workshop happened on March 23, 2022 to give insight to students and researchers on Dockers and Kubernetes. During a software development phase, docker is a suite used for creating, sharing and running individual containers whereas Kubernetes is a system for operating containerized applications at scale. It was mainly focused to benefit students and let them think out of the box. The audience was trained during the workshop session. It was quite interesting to receive lot of queries during the session.

## TARGET

All Students Electronics, ICT, Energy Faculty Staff ATTENDEES

23

SPEAKERS Martijn Dendooven (Chair) Baptiste Pattyn (Skyline)





## **Challenges in Smart Cities**

March 29th

· 19:00

Spoorwegstraat 12, Bruges − Room 03.01

## 至 € 5.00 - € 20.00, tickets on edu.ieee.org/be-kulbrugge

#### 🗑 Reception included

Bram De Vreese (Stad Brugge)
 Guus Leenders and Chesney Buyle (WaveCore Research Group – Dramco)
 Tim Claeys (WaveCore Research Group – EMC Lab)
 Annie Pinxten (Slimme Regio Vlaanderen)

*Challenges in Smart Cities*, our first public event, took place at our campus on March 29, 2022. Various aspects related to Smart Cities were presented to students, researchers and professionals. Mr. Guus Leenders from Dramco emphasise mainly on LPWAN Communication and hardware fusion. Mr. Chesney Buyle from Dramco also joined, he explained the concepts of development and deployment constraints, wireless acoustic sensors node with results. Mr. Tim Claeys focused his talk on dependable wireless communication. He investigated how wireless communication can be flexible in Smart Cities thinking into safety critical applications following EMI Risk mitigation techniques. Ms. Annie Pinxten from Slimme Regio Vlaanderen gave a talk on how society sees the prescriptive of Smart Cities. It was quite pleasure to see the audience asking questionnaires.

### TARGET

All Students Electronics, ICT, Energy Faculty Staff

## ATTENDEES

50

### **SPEAKERS**

Martijn Dendooven (Chair)

Bram De Vreese [Apologized] (Stad Brugge)

Guus Leenders and Chesney Buyle (Dramco)

Tim Claeys (ESAT, M-Group)

Annie Pinxten (Slimme Regio Vlaanderen)





## Let's Meet Agoria Solar Team

May 2nd ① 19:00
 Spoorwegstraat 12, Bruges – Room 06.01
 Register on edu.ieee.org/be-kulbrugge
 Sandwiches and drinks included

Our subdivision EMA, Energy Mechatronics and Automation, organised a networking event with the purpose to connect with the fellow students at our campus from Electromechanical and Energy group. This event was planned on May 2, 2022. Members of the Agoria Solar Team explained the challenges and solution to build the best solar car in the world. Their presentation was given to the target audience including bachelor, masters, PhD Students and faculty staff. It was glad to see the substantial number of audiences during our first event for this department. The meeting concluded with dinner and drinks.

## TARGET

All Students Electromechanics and Energy Faculty Staff 45

**ATTENDEES** 

SPEAKERS

Martijn Dendooven (Chair)

Yari Van Hecke Zander Radelet (Agoria Solar Team)

Need some help during the study and exam period? Exam ombuds Anne-Sophie Doubel

reme ou

Head of Education

Care coordinator

Study advisor

Psychological department

Reception

ombuds.brugge@kuleuven.be +32 56 49 27 64

> Joan Peuteman joan.peuteman@kuleuven.be +32 50 66 48 44

> onthaal.brugge@kuleuven.be +32 50 66 48 00

Anne-Sophie Doubel ombuds.brugge@kuleuven.be +32 56 49 27 64

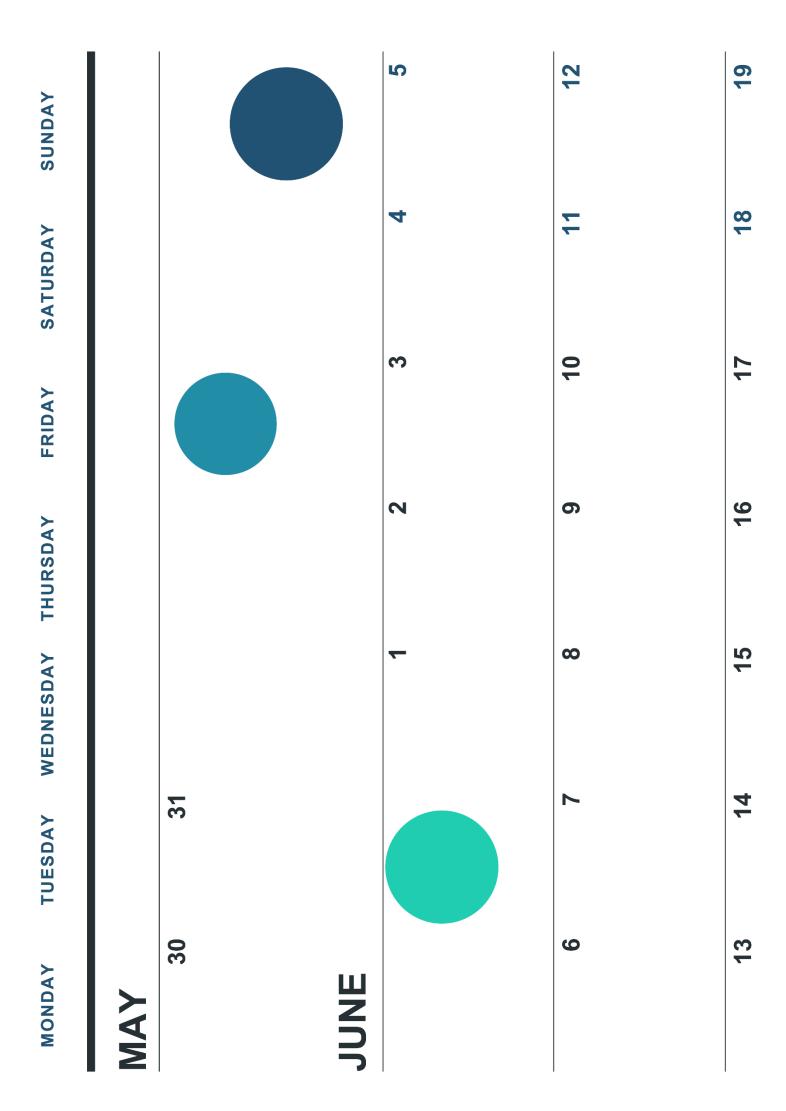
Lorenzo Parmentier lorenzo.parmentier@kuleuven.be +32 56 24 61 38

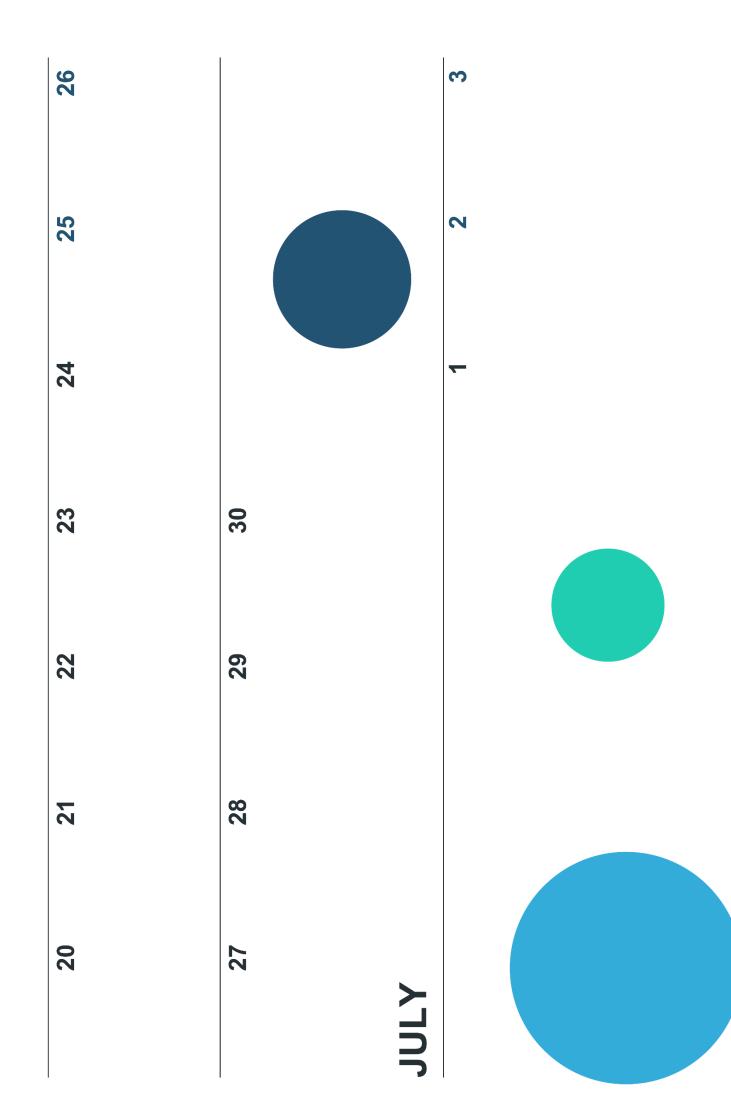
Amelie Callewaert amelie.callewaert@stuvoloods.be

Lisa Roman lisa.roman@stuvoloods.be

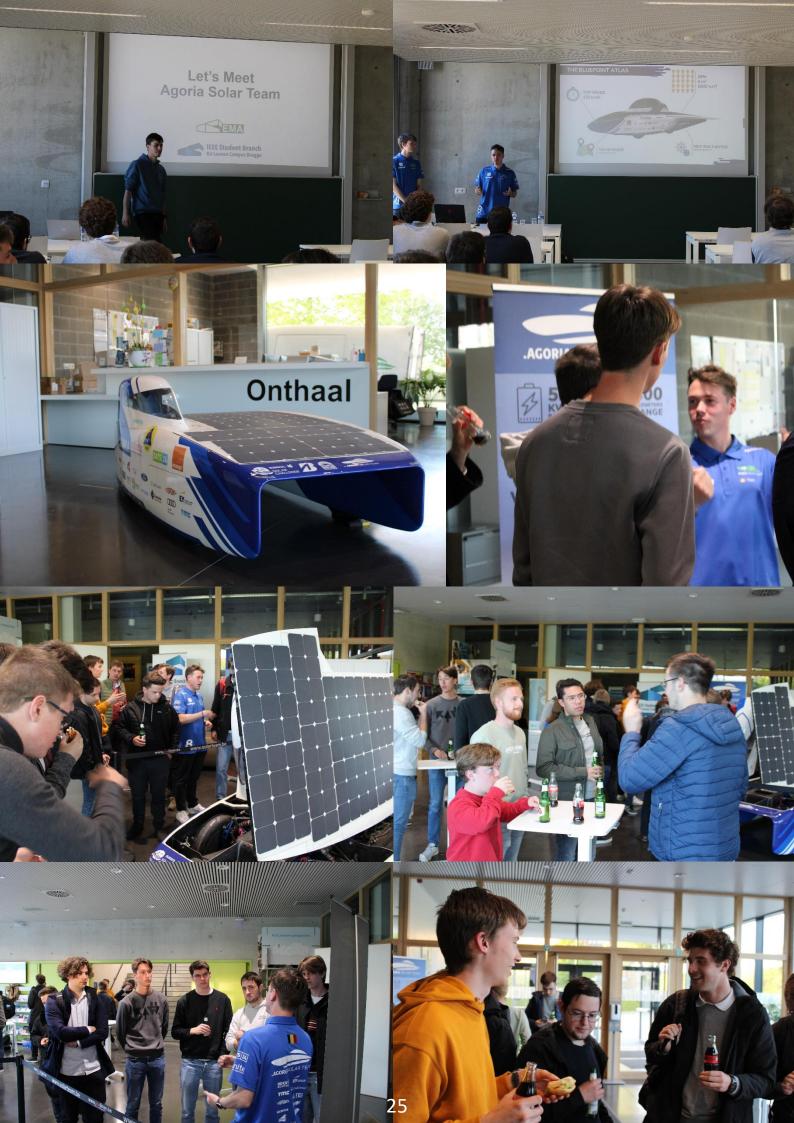
Brenda De Veleer brenda.develeer@stuvoloods.be

+32 50 30 52 90









# **TREMEC Event**

🗓 May 9th

19:00

Spoorwegstraat 12, Bruges – Room 03.01

Register on edu.ieee.org/be-kulbrugge
 Diner included

Another event had a focus on TREMEC, it happened at our campus on May 9, 2022. It was targeted for the bachelor, masters PhD researchers and staff to gain industrial exposure. TREMEC displayed the few demonstrations related to automotive hybrid vehicles. The fundamental and the operations behind the vehicle mechanism was taught by the experts from TREMEC. During the break we had a pasta party.

## TARGET

All Students Electronics, ICT, Energy Faculty Staff ATTENDEES

50

SPEAKERS

Martijn Dendooven (Chair)

Richard Ballaux Nick Gereels Thomas Trobec Wouter Deforche (TREMEC)



# **Staff Awards**

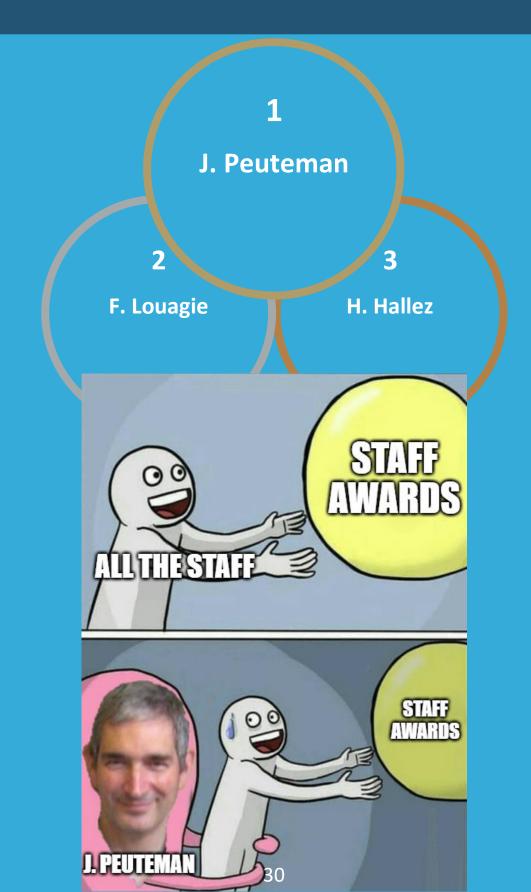
## Who tells the best jokes?



## Who told the most memorable story?



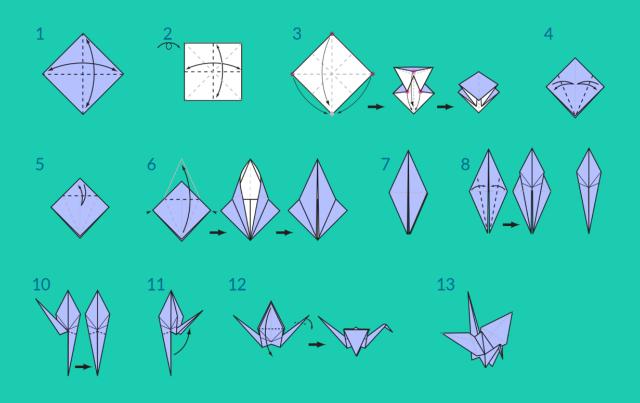
## Who is the most up-to-date?



# Your daily motivation

With this section we want to motivate you every day during the study and exam period. On our socials you will find the solutions of most challenges ...

#### Monday May 30



Tuesday May 31

#### What is this strange object and what is it used for?

- A. turnip knife to cut Jack-o'-lanterns
- B. hoof knife to trim a horse's hooves during shoeing
- C. knife to cut away paint



Wednesday June 1

#### Join our Strava Community at: https://www.strava.com/clubs/IEEE

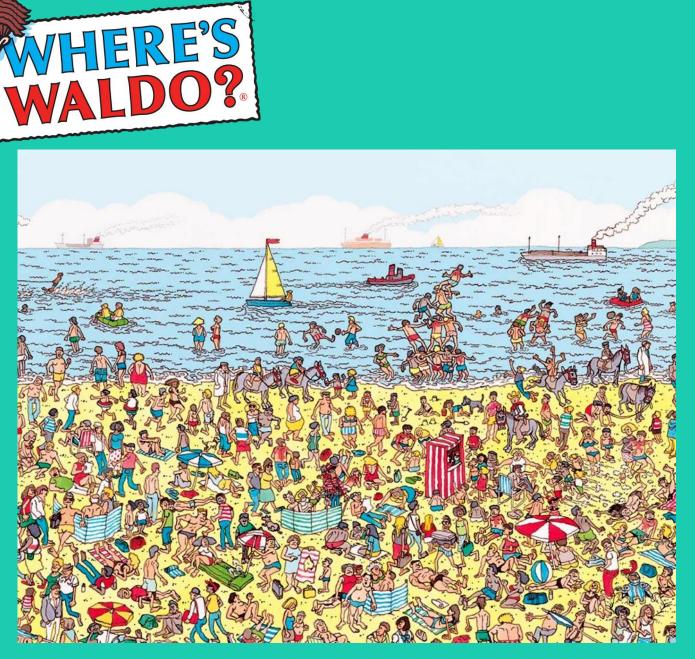
And go for a walk! If we reach all together a movement time of 1500 minutes during the exam period, all participants will receive a surprise!



Teamwork makes the dream work



Thursday June 2



#### Friday June 3

# Where is E located in the grid based on the clues?

K touches W and G

F touches L and Z

X does not touch K

Y is in a row below K's row

(Touching can be diagonally)

Saturday June 4

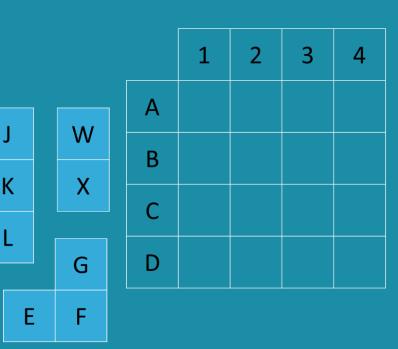
#### What is the correct code?

- 425 One digit is right and in its place
- 503 One digit is right but in the wrong place
- 792 Two digits are right but both in the wrong place

Y

Ζ

- 681 All digits are wrong
- 217 One digit is right but in the wrong place



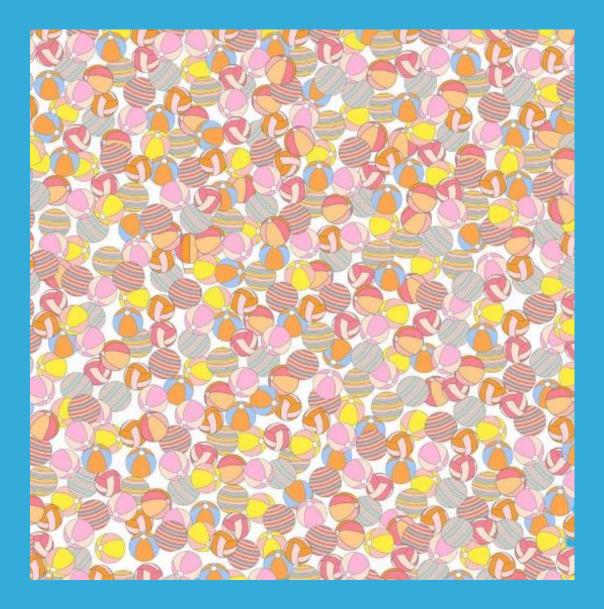
?

#### Sunday June 5

There are 50 mopets, each with a tank that holds enough gas to go 100 km. Using these 50 mopets, what is the maximum distance that you can go?

# Monday June 6

# Can you spot the hot air balloon?



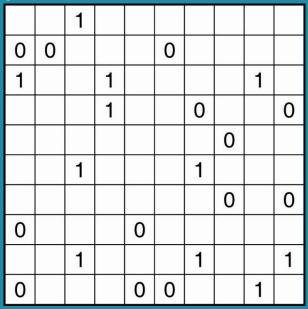
# Tuesday June 7



# Who is this Officer?

- A. Martijn
- B. Benjamin
- C. Pavi
- D. Arne
- E. Gregory
- F. Kobe

### Wednesday June 8



#### **Thursday June 9**



# Who is this Officer?

- A. Martijn
- B. Benjamin
- C. Pavi
- D. Arne
- E. Gregory
- F. Kobe

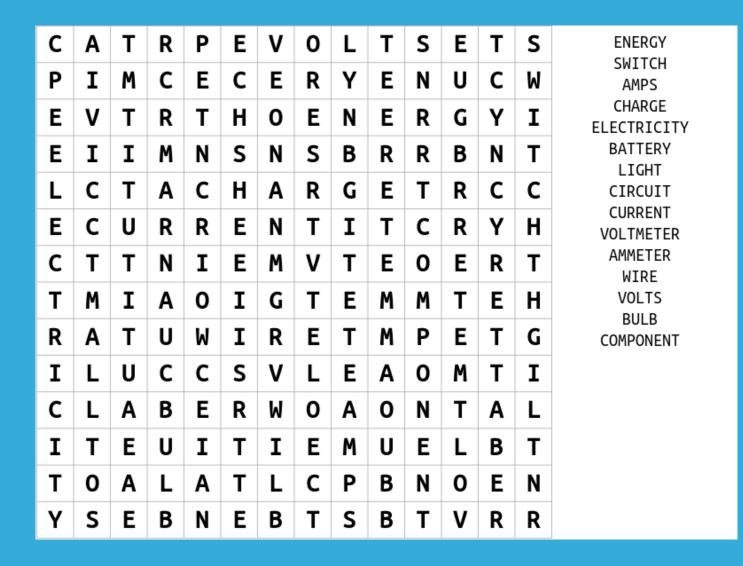
## Friday June 10

## What is this strange object used for?

- A. tool to paint a pattern on the wall
- B. tool used by winemakers to press cork into wine bottles
- C. tool to pinch ears in order to be able to wear earrings



Saturday June 11



Sunday June 12

Make a paper airplane that can fly at least 10 meters

### Monday June 13



#### Who is this Officer?

- A. Martijn
- B. Benjamin
- C. Pavi
- D.Arne
- E. Gregory
- F. Kobe

# Tuesday June 14

Locate the indicated fleet in the grid. Each segment of a ship occupies a single cell. Ships can be rotated. Different ships cannot be placed in adjacent cells that share an edge or corner. Some ship segments, or sea cells without any ship segments, are given in the grid. The numbers on the right and bottom edges of the grid reveal the number of ship segments in that row or column.

# 

## Wednesday June 15

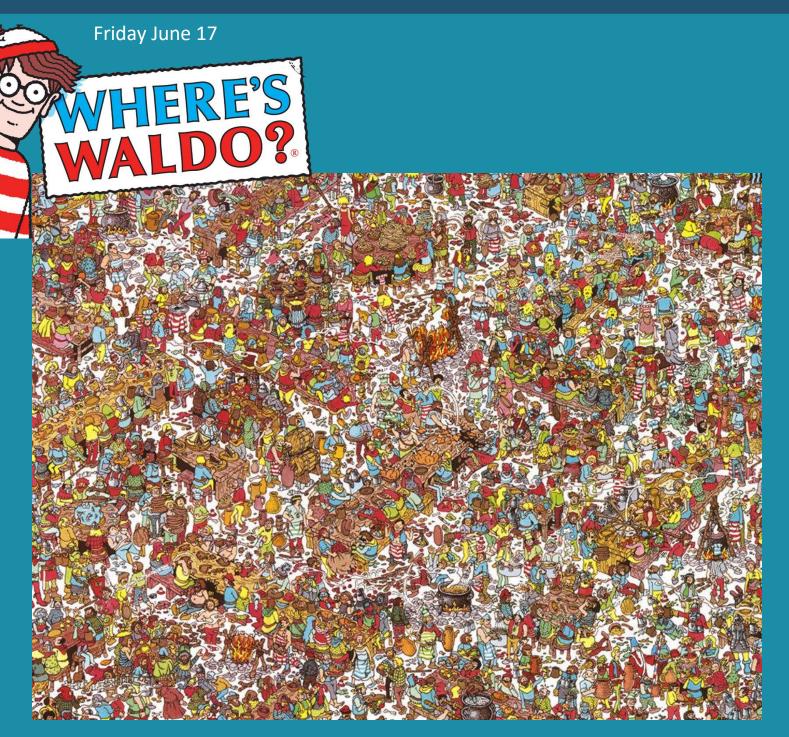
		6		3	5			
		2 7			4		7	
		7		8				6
9	7					8		
	2						1	
		3					5	9
1				2		6		
	8		6			5		
			9	1		7		

Thursday June 16

# What is this strange object used for?

- A. create small holes
- B. clean small tubes
- C. tighten taps





#### Saturday June 18



#### Who is this Officer?

- A. Martijn
- B. Benjamin
- C. Pavi
- D. Arne
- E. Gregory
- F. Kobe

Sunday June 19

Peter was asked how old he was. His reply was like this "In a period of 2 years my age will be twice my age when you asked this five years ago" How old is he?

Monday June 20



Tuesday June 21

#### What is this strange object used for?

- A. drill holes in wood
- B. pierce leather
- C. create jewelry



Wednesday June 22

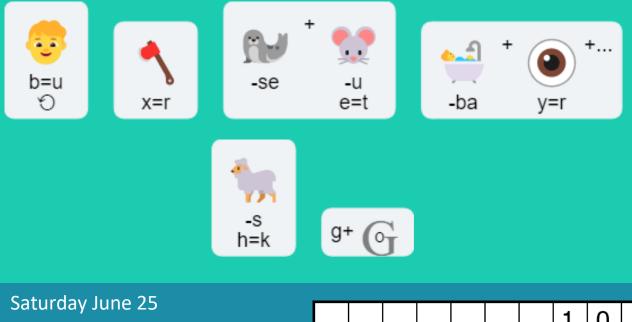


#### Thursday June 23

	30	31		33		35	36
	26	58			52		
27				56		54	38
60	64	8	7	23			
	9	63		22	48	1	40
	62	5				47	
	14	15			45	46	42
	12		17	18			

Fill in the grid so that you create a path of consecutive numbers from 1 to 64. The consecutive number can be connected in all directions, even diagonally.

Friday June 24



							1	0	
	0		1	1					
	0		1						
0					0			0	0
0		1				0		0	
1			0						
				1					0
		1				1			0
1		1		1					

Sunday June 26

# How can you add eight 4s together so that the total adds up to 500?

Don't forget to spend some time outside! Do some sport and register it on Strava. Let's reach the goal of 1500 minutes.



**Tuesday June 28** 





#### Who is this Officer?

- A. Martijn
- B. Benjamin
- C. Pavi
- D. Arne
- E. Gregory
- F. Kobe

Wednesday June 29

#### What is this strange object used for?

- A. cutting eggs
- B. opening wine
- C. trimming cigars



# Thursday June 30



### Who is this Officer?

- A. Martijn
- B. Benjamin
- C. Pavi
- D. Arne
- E. Gregory
- F. Kobe

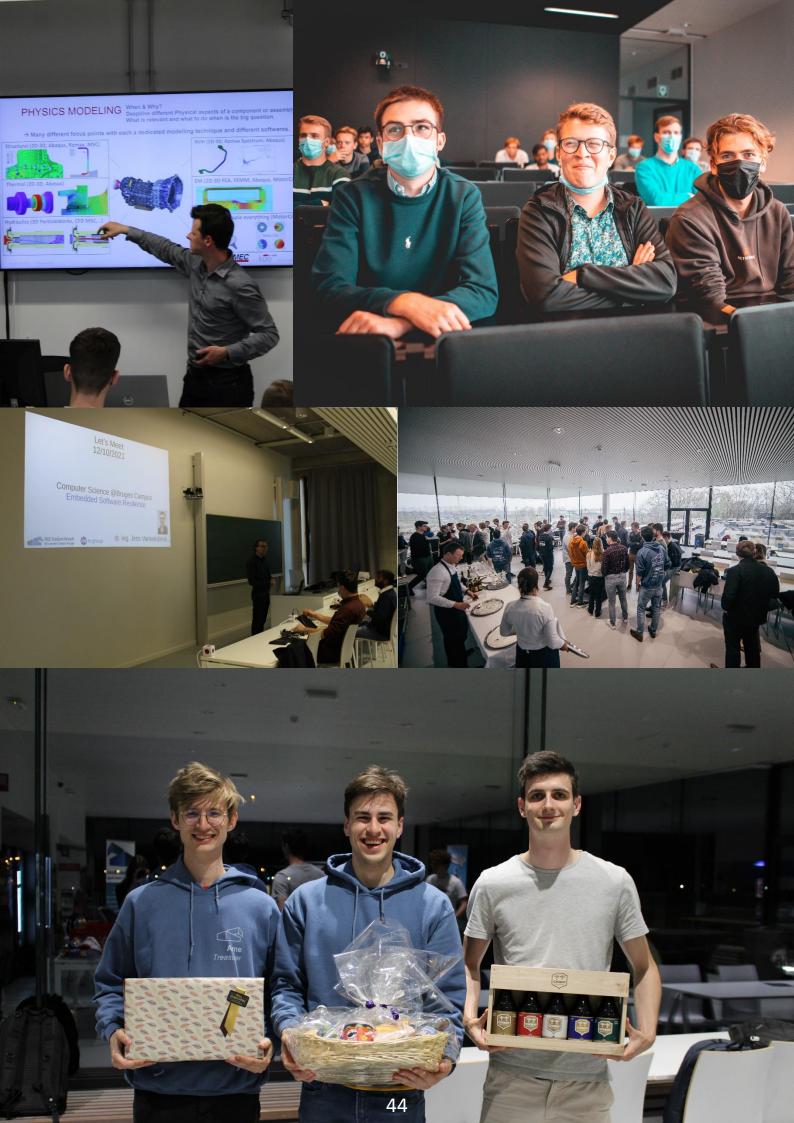
Friday June 31

# What is this strange object and what is it used for?



- A. flour duster, a tool used to sprinkle sugar or flour on cakes
- B. brush to untangle your hair
- C. device to remove fish bones







# **External contributions**

Lara Luys (Master student Electronics-ICT) suggested the name of this magazine, *TechnologIEEE*. The Executive Committee selected her submission as the best option. The subtitle 'Invented by Johannes Gutenberg' refers to the technology you are holding right now: a printed magazine. The fabrication of this magazine was made possible through the use of a printing press, which was first introduced in Europe by the inventor Johannes Gutenberg.



# **External contributions**



Zoë Everaert



**Mathis Deroo** 



Lander Avet



**Paulien Bruneel** 

Zoë Everaert, Mathis Deroo, Lander Avet and Paulien Bruneel are four fifth formers who took seminar *presenting* as their elective this year. Little did they know they were also going to work on a real magazine. Even their teacher did not have a clue at the start of this school year.

A former student of the then Sint-Aloysiuscollege of Diksmuide, the present chair of IEEE Student Branch convinced them to add a magazine project to their curriculum.

And the students loved it. In spite of only having a limited number of lessons to work on this project they created a basis for TechnologIEEE.

Natascha Coene











