What is IEEE INSAT SB ?

The IEEE INSAT Student Branch (IEEE INSAT SB) is a chapter of the Institute of Electrical and Electronics Engineers (IEEE) located at the National Institute of Applied Science and Technology (INSAT) in Tunis, Tunisia. It serves as a platform for students to engage with professionals, participate in technical and professional development activities, and collaborate on projects in engineering and technology fields.

The branch comprises various technical chapters and affinity groups, including the IEEE Computer Society Chapter, IEEE Robotics and Automation Society Chapter, and IEEE Women in Engineering Affinity Group. These subgroups focus on specialized areas, offering members opportunities to delve deeper into specific interests.

What is the IEEE RAS INSAT SBC?

The IEEE Robotics and Automation Society (RAS) chapter at INSAT is a student club

dedicated to promoting robotics and automation, offering activities and opportunities for

approximately 200 members. Among its key initiatives is the National Robotics Weekend

(NRW).

What is the NRW Congress ?

The National Robotics Weekend (NRW) Congress is the ONLY robotics congress in Tunisia,

bringing together around 350 students from across the country. It takes place annually over

three days in June. This year marks its 7th edition, scheduled for June 27th, 28th, and 29th.

MAIN AXES OF THE EVENT:

● MAKEATHON

● Exhibition Sessions

● Conferences Entrepreneurial Challenge

● Technical challenges

Our Previous Edition

Speakers:

● **Oussama KHATIB**

Professor of Computer Science at Stanford University

Oussama Khatib received his PhD from Sup'Aero, Toulouse, France, in 1980. He is

Professor of Computer Science at Stanford University and Director of the Stanford Robotics

Center (SRC). His research focuses on methodologies and technologies in human-centered

robotics, haptic interactions, artificial intelligence, and human motion synthesis. Professor

Khatib is President of the International Foundation of Robotics Research (IFRR) and an IEEE Fellow. He is Editor of the Springer STAR and SPAR series, Springer Handbook of Robotics, and Springer Encyclopedia of Robotics. He is recipient of the IEEE Robotics and Automation, Pioneering Award, the George Saridis Leadership Award, and the Distinguished Service Award. Professor Khatib is recipient of the Japan Robot Association (JARA) Award, the Rudolf Kalman Award, and the IEEE Technical Field Award. He is Knight of the French National Order of Merit and a member of the United Sates National Academy of Engineering. Professor Khatib is recipient of the 2024 Great Arab Minds Award.

Computer Science | Robotics● **Jim SCHMIEDELER**

Professor at University of Notre Dame

He received the B.S. degree from Notre Dame and the M.S. and Ph.D. degrees from The Ohio State University, all in mechanical engineering. He has previously chaired both the ASME International Design Engineering Technical Conferences (IDETC) and the IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS). He is a recipient of the Presidential Early Career Award for Scientists and Engineers (PECASE) and a fellow of the American Society of Mechanical Engineers.

Aerospace | Mechanical Engineering

● **Anis KOUBAA**

Director of Robotics and Internet of Things Unit at Prince Sultan University

Distinguished academic and innovative leader in the field of technology. He currently serves as the Director of the Research and Initiative Center (RIC) and Aide to the President of Research Governance at Prince Sultan University, Saudi Arabia. His contributions to academia are further recognized by his status as a Senior Fellow of the Higher Education Academy (SFHEA). Founder and CTO of ScaleX Innovation, a pioneering company specializing in Generative AI. His entrepreneurial spirit and commitment to advancing technology have positioned ScaleX Innovation at the forefront of AI research and development. accomplished researcher with numerous scientific publications to his name. His work primarily focuses on Robotics, Artificial Intelligence, and Generative AI, making significant strides in these cutting-edge fields.

Generative AI | Robotics

● **Cristina MONREAL**

Full professor and head of the Department Intelligent Transport Systems at the Johannes Kepler University Linz, Austria

Full professor and Head of the Department Intelligent Transport Systems at the Johannes Kepler University Linz, in Austria.Resident of the IEEE Intelligent Transportation Systems Society (IEEE ITSS) for the years 2022 and 2023.Chair for the Technical Activities Committee (TAC) on Human Factors in Intelligent Transportation SystemsFounder and chair of the Austrian IEEE ITSS chapterIntelligent Transport | Transportation Systems

● **Oussema CHELLY**

ML Cloud Solution Architect, AWS Cloud Solution Architect, Microsoft AI & IoT Lab EMEA

Oussama Chelly is the Founder and CEO of Oratio, a startup specializing in GenAI-powered chatbots, and a Partner at Omicrone, where he builds the AI & Cloud department. Before launching Oratio, he served as a Cloud Solutions Architect at Amazon Web Services and previously at Microsoft. For the past seven years, he has been architecting cloud solutions for strategic customers in the EMEA region, including governments and Fortune Global 500 companies.

AI | IoT | Cloud Computing

● **Anis SAHBANI**

Associate Professor at Sorbonne University - CEO & Founder of Enova Robotics S.A.

Anis Sahbani is an expert in robotics and the CEO of Enova Robotics.

Robotics | Entrepreneurship

Firas BEN HASSEN

Deputy Head of Data Science Services Mentor , Entrepreneur

Firas is the Deputy Head of Data Science Services at Allianz Technology, where he plays a pivotal role in steering his data science team towards innovative solutions. With a strategic mindset, Firas also holds the mantle of Program Manager for AllianzGPT, orchestrating the Large Language Models platform 's development to ensure it meets the cutting-edge standards of AI assistance in the insurance and financial services sector. A zealous advocate for knowledge sharing and AI education, Firas is a respected AI guest lecturer at the Technical University of Munich since December 2023. His expertise in the field of artificial intelligence and data science has not only shaped the minds of aspiring professionals but has also been a bridge connecting academic theory with industry practice.

Data Science | EntrepreneurshipTHIS YEAR SPEAKERS

● Bruno Siciliano

Professor of robotics and control at the University of Naples Federico II

Bruno Siciliano is professor of robotics and control at the University of Naples Federico II. He is also Honorary Professor at the University of Óbuda where he holds the Kálmán Chair. His research interests in robotics include manipulation and control, human–robot cooperation, and service robotics. Fellow of the scientific societies IEEE, ASME, IFAC, he has received numerous international prizes and awards, including the recent 2024 IEEE RAS Pioneer Award in Robotics and Automation. He was President of the IEEE Robotics and Automation Society from 2008 to 2009. He has delivered more than 150 keynotes and has published more than 300 papers and 7 books. His book "Robotics" is among the most adopted academic texts worldwide, while his edited volume "Springer Handbook of Robotics" has received the highest recognition for scientific publishing: the 2008 PROSE Award for Excellence in Physical Sciences & Mathematics. His team has received more than 25 million Euro funding in the last 18 years from competitive European research projects, including two ERC grants.

Computer Science | Robotics

● Cecilia LASCHI

Provost's Chair Professor at the National University of Singapore

Cecilia Laschi is Provost's Chair Professor at the National University of Singapore, Director of Advanced Robotics Centre and Co-Director of CARTIN – Centre for Advanced Robotics Technology and Innovation. She is on leave from Scuola Superiore Sant'Anna, Italy, The BioRobotics Institute. She graduated in Computer Science at University of Pisa and received a Ph.D. in Robotics from University of Genoa. She received an Honorary Doctorate from the University of Southern Denmark, Odense. Cecilia Laschi is best-known for her research in soft robotics, an area that she pioneered and contributed to develop at international level. She uses a bioinspired approach starting from the octopus as a model for robotics. She explores marine applications of soft robots and their use in the biomedical field, specifically in eldercare. She is IEEE Fellow and IEEE Robotics & Automation Society (RAS) member, serving twice as AdCom member. She founded the 1st IEEE International Conference on Soft Robotics (RoboSoft) in 2018, serving now in its Advisory Committee. She co-founded

the Technical Committee on Soft Robotics. She has been Program Chair of IEEE/RSJInternational Conference on Intelligent Systems – IROS in 2018 and in 2024. Still for IEEE

RAS, she is Senior Editor of IEEE Robotics & Automation Letters.

Computer Science | Robotics

● **Nehad El-Sherif**

Founder and President of MNKYBR Technologies Inc

Nehad El-Sherif, M.Sc., P.Eng., MBA, SMIEEE is the Founder and President of MNKYBR

Technologies Inc., a Canadian company specialized in R&D and engineering services.

El-Sherif is a Professional Electrical Engineer with experience in software & hardware

design, new product development, product certification, business development, product

management, sales & marketing, and electrical safety. He authored and co-authored IEEE

peer-reviewed papers, technical articles, white papers and delivered technical presentations

at various industry conferences. El-Sherif is a senior member of IEEE (SMIEEE), an

executive board member of IEEE Industry Applications Society (IAS) and IEEE Standard

Association Standards Board (SASB), and a member of IEEE Technical Activities Board

(TAB) Committee on Standards (TCoS). He serves on NFPA Code Making Panel 2 (CMP-2)

for the continued development of the National Electrical Code (NFPA 70), CSA Z462

(Workplace Electrical Safety Standard) technical committee, as well as various UL and CSA

product safety certification standards technical panels. El-Sherif received several awards

and recognitions including the 2024 IEEE IAS Electrical Safety Committee Excellence in

Prevention through Design Award in Tucson, AZ and the First Place Prize Paper Award at

the 2023 IEEE IAS Pulp and Paper Industry Conference in Spokane, WA. He earned his

B.Sc. and M.Sc. in Electrical Engineering from Ain-Shams University, Cairo, Egypt and an

MBA from the University of Saskatchewan, Saskatoon, Canada. El-Sherif is a sessional

lecturer at the University of Saskatchewan and holds two patents.

Senior IEEE Member | Electrical engineer

● anis koubaa

● oussama khatib

4 Technical Challenges:

CHALLENGE 1Embedded Competitive Programming Contest

Overview

In National Robotics Weekend, we give you the chance to embark in an adventure like no other, where you'll test your skills in both embedded systems and competitive programming. In This challenge, participating teams will tackle a range of problems that demand a hardware and software expertise and they will be provided with essential equipments comprising boards and sensors Competition Process

• Problem set Reception: Each team receives a pack of problem sets along with essential equipment.

• Problem solving phase.

• Beta testing phase: Each team receives a pack of problem sets along with essential equipment.

Evaluation process

In National Robotics Weekend, we give you the chance to embark in an adventure like no other, where you'll test your skills in both embedded systems and competitive programming. In This challenge, participating teams will tackle a range of problems that demand a hardware and software expertise and they will be provided with essential equipments comprising boards and sensors

CHALLENGE 2

The Makeathon

Overview

• Our main technical challenge is the Makeathon, a 32-hour competition where participants are challenged to find solutions to problems presented by startups.

• Utilizing various technologies, teams work intensively to create innovative prototypes that address these challenges.

Fostering Innovation

The makeathon aims to foster innovation and creativity by challenging participants to solve problems using provided equipment such as microcontrollers and sensors.

Mentorship and Support

Throughout the entire 32-hour competition , mentors will be present to clarify the competition format and thematics, as well as to offer continuous guidance and support to participants.

Rules of the Competition

• Teams must have a prototype by the end of the makeathon.• Participants must only use equipments we provide.

CHALLENGE 3

GenAIxRobotics

Design a prototype robot that integrates a Generative AI model capable of

understanding and executing simple voice commands. The robot should process

natural language instructions like:

• "Avance de 1 mètre à 0.5 m/s"

• "Recule de 2 mètres à 0.3 m/s"

• "Tourne de 90 degrés"

The focus is on precision execution, without the robot being distracted by additional

tasks such as object detection or manipulation. The pipeline would involve:

• NLP (voice-to-text)

• A lightweight GenAI model to parse and interpret the command

• A robotics module to execute it accordingly

CHALLENGE 4

The Entrepreneurship Challenge

Overview

• National Robotics Weekend is a place for Entrepreneurship spirit, business creation

enthusiasts and start-up builders.

• Challenge, participants are asked, in 32 hours, to solve a social or economic

problem

• This challenge offers the opportunity for participants to potentially launch their own

start-ups, by providing the possibility of incubation for the winning Start-Up idea.

Mentorship and Guidance

Throughout the 32-hour journey, experienced mentors will provide guidance, helping

teams refine their ideas and turn them into solutions by making an impact on society

while fostering entrepreneurship and collaboration within the technology community.

Who is Skander Gritli ?

Skander Gritli is the most intelligent person behind the success of NRW (National Robotics

Weekend). He is a visionary leader and the CEO, known for his exceptional contributions in driving

innovation, technology, and organizational excellence within the IEEE RAS community.

Who is Ines Bouzguenda ?

Ines Bouzguenda is a CH3 student at INSAT, recognized as one of the great minds at the institution. She is the founder and chairwoman of the IEEE SIGHT Group at INSAT.