Salah Abdeljabar

PhD Candidate at King Abdullah University of Science and Technology (KAUST)
Thuwal, Saudi Arabia | +966 544509259 | salah.abdeljabar@kaust.edu.sa | linkedin.com/in/salahabdeljabar

EDUCATION

King Abdullah University of Science and Technology (KAUST) Thuwal, Saudi Arabia
PhD in Electrical and Computer Engineering, Advisor: Prof. Mohamed-Slim Alouini *May 2023 - Present*

- Thesis: Towards Global Connectivity for Devices and People.

King Abdullah University of Science and Technology (KAUST) Thuwal, Saudi Arabia
MS in Electrical and Computer Engineering, GPA 3.95/4.0, Advisor: Prof. Mohamed-Slim Alouini *Aug 2021 - May 2023*

- Thesis: On the Optimization of Reconfigurable Intelligent Surfaces for Visible Light Communications.

Lund University Lund, Sweden
Erasmus Exchange Student *Aug 2017 - Jan 2018*

- Courses in Digital Communications, Antenna Technology, and Digital IC-Design.

The University of Jordan Amman, Jordan
Bachelor's in Electrical Engineering (ABET accredited program), GPA 3.95/4.0 ***(ranked 1st)*** *Sep 2014 - Jun 2019*

- Courses in Communication Systems, Communication Networks, and Applied Mathematics.

PROFESSIONAL EXPERIENCE

Graduate Research Assistant Aug 2021 – Present
Communication Theory Lab, King Abdullah University of Science and Technology (KAUST) *Thuwal, Saudi Arabia*

- Designed and implemented a practical technique to increase LoRa data rates (Super-LoRa).
- Conducted experiments on LoRa transmission over TV White Spaces in collaboration with *Microsoft Research.*
- Developed a Delay-Tolerant Networking digital learning platform deployed for rural connectivity use cases.
- Contributed to the design and deployment of a hybrid Free-Space Optical (FSO) / Microwave (MW) link to connect remote areas and islands.
- Investigated and optimized RIS-Assisted VLC systems to improve data rates and fairness among users in mobile scenarios (indoor and outdoor setups).

Research Fellow Sep – Dec 2024 & Sep – Dec 2025
Marconi Lab, International Centre for Theoretical Physics (ICTP) *Trieste, Italy*

- Designed and implemented a practical and energy efficient off-grid wireless network based on LoRa Mesh.
- Conducted advanced research on DTN and public transportation systems as data mules.
- Modeled stochastic processes to improve data transfer reliability in delay-tolerant networks.

Graduate Teaching Assistant Jan 2023 – Present
King Abdullah University of Science and Technology (KAUST) *Thuwal, Saudi Arabia*

- Served as teaching assistant for graduate-level courses including Stochastic Processes, Numerical Optimization, Applied Mathematics, Mathematical Foundations of Machine Learning, and Linear Algebra.
- Managed classes of 40+ students; developed course projects, graded assignments, delivered review sessions, proctored exams, and held weekly office hours.
- Lead TA and local organizer for the TinyML Engineering for IoT Workshop (Jan 2025 & Jan 2024), leading hands-on sessions, mentoring participants, and preparing course materials.
- Mentored 10+ students on research projects ranging from DTN-based educational platforms to LoRa mesh networking protocols.

Technical Consulting Engineer Jun 2019 - Jul 2021
ESTARTA Solutions (Cisco Systems) *Amman, Jordan – Kraków, Poland*

- Providing technical support for Cisco's worldwide partners and customers; working on high impact and complexity problems related to hardware, software, and/or network design; close collaboration with Account, Business and Engineering units.
- Expertise in Enterprise level Routing & Switching, Cisco IOS-XE, Catalyst 9000, IE and CDB series Switches.

Software Engineer (Internship) Feb 2019 - Jun 2019
JO VISION *Amman, Jordan*

- Image processing using C++ OpenCV, and Machine Learning algorithms for digital pathology.
- Designed image stitching algorithm using OpenCV library to stitch microscope slide images in real-time.

Electrical Design Engineer (Internship) May 2018 - Jul 2018
Dar Al-Handasah *Amman, Jordan*

- Worked on small to medium-scale electrical design projects, including low current systems (structured cabling network and CCTVs) and power systems (cable sizing, protection devices, PV Systems, and UPSs) using DIALux, AutoCAD and Revit software.

PUBLICATIONS (Google Scholar)

- **S. Abdeljabar**, M. Zennaro, and M. -S. Alouini, *"Delay-Tolerant Networking to Extend Connectivity in Rural Areas Using Public Transport Systems: Design And Analysis,"* in IEEE IoT Journal (2025). **Link**
- **S. Abdeljabar**, and M. -S. Alouini, *"Super-LoRa: Enhancing LoRa Throughput via Payload Superposition,"* in IEEE IoT Journal (2025). **Link**
- **S. Abdeljabar**, M. W. Eltokhey and M. -S. Alouini, *"Sum Rate and Fairness Optimization in RIS-Assisted VLC Systems,"* in IEEE Open Journal of the Communications Society (2024). **Link**
- **S. Abdeljabar**, M. W. Eltokhey, and M.-S. Alouini, *"Reconfigurable intelligent surfaces for outdoor visible light communications,"* in IEEE IoT Magazine (2024). **Link**
- **S. Abdeljabar**, and M. -S. Alouini, *"Reconfigurable Intelligent Surfaces for RSMA-Based VLC Systems"* in Optical Wireless Communication Conference, Jakajima (2023). **Link**
- F. S. Alqurashi, **S. Abdeljabar**, A. Trichili and M. -S. Alouini, *"Overcoming Maritime Connectivity Challenges with Hybrid RF/FSO Links,"* in IEEE Globecom Workshops (2024). **Link**
- —, **S. Abdeljabar**, — *"TinyML4D: Scaling Embedded Machine Learning Education in the Developing World,"* in Proceedings of the AAAI Symposium Series, (2024). **Link**

AWARDS

Saudi Aramco Digital Hackathon Winner, Thuwal, Saudi Arabia Jan 2026
6G Summit "Imagining Tomorrow" Video Competition Winner, Thuwal, Saudi Arabia Nov 2025
Falling Walls Lab KAUST Finalist, Thuwal, Saudi Arabia Sep 2025
KAUST CEMSE Dean's List Award for Exceptional Academic Achievements, Thuwal, Saudi Arabia 2025
IEEE ICC 4MT Thesis Competition Winner, Montreal, Canada Jun 2025
ICTP-Arab Fund PhD Fellowship, Trieste, Italy Sep 2024 – Dec 2026
IEEE SusTech 2023 Student Poster Contest Winner, Portland, USA Apr 2023
King Abdullah University of Science and Technology Fellowship, Thuwal, Saudi Arabia Aug 2021 - Present

WORKSHOPS AND CERTIFICATIONS

Communication in Extreme Environments for Science and Sustainable Development, Trieste, Italy 2023
Widening Access to TinyML Network by Establishing Best Practices in Education, Trieste, Italy 2023
Tiny Machine Learning (TinyML), HarvardX 2023
Cisco Certified Network Associate (CCNA) Routing and Switching, Cisco Systems 2020

OUTREACH ACTIVITIES

Journal Reviewer, IEEE Transactions on Vehicular Technology Oct 2025
Journal Reviewer, IEEE Transactions on Wireless Communications Sep 2025
Conference Reviewer, IEEE PIMRC Conference, Istanbul Jun 2025
Conference Reviewer, IEEE Wireless Communications and Networking Conference (WCNC), Dubai Apr 2024
Winter Enrichment Program (WEP) Volunteer, KAUST, Thuwal, Saudi Arabia Dec 2022
Co-Founder of IEEE Power and Energy Society, The University of Jordan, Amman, Jordan 2018-2019
Students' Union Member, Board of European Students of Technology (BEST), Lund, Sweden 2017-2018

TECHNICAL SKILLS

Developer Tools: Git/GitHub, Linux, Docker, GNU Radio, Software Defined Radio (SDR), PyTorch, TensorFlow, Jax.

Programming Skills: C/C++, Python, MATLAB, Mathematica.

Languages: Arabic: Native proficiency, English: Advanced (IELTS: 8; TOEFL iBT score: 100).

TEACHING AND MENTORING EXPERIENCE

Graduate-Level Courses:

- **AMCS241 Stochastic Processes**, KAUST, with Prof. Mohamed-Slim Alouini — Spring 2026
- **AMCS250P Linear Algebra** for Masters in AI, KFSC, with Prof. Sabine El Khoury — Spring & Fall 2025
- **AMCS202 Applied Mathematics**, KAUST, with Prof. Alexandra Gomes — Summer 2024 & 2025
- **AMCS211 Numerical Optimization**, KFSC, with Prof. George Turkiyyah — Spring 2024 & 2025
- **AMCS215 Mathematical Foundations of ML**, with Prof. George Turkiyyah — Fall 2023
- **AMCS211 Numerical Optimization**, KAUST, with Prof. George Turkiyyah — Spring 2023

Workshop Organization and Leadership:

- **Introduction to AI for High School Students**, KAUST Academy — Summer 2025
  Lead Instructor for High School Summer Program (HSSP), part of STEPs. Designed curriculum and projects introducing AI concepts, practical tools (e.g., Edge Impulse), and the complete ML development cycle from data collection to edge deployment.
- **Workshop on TinyML Engineering for IoT**, KAUST & ICTP — Jan 2025
  Lead Teaching Assistant & Local Organizer. Collaborated with Prof. Marco Zennaro (ICTP, Italy) and Prof. Pietro Manzoni (Universitat Politècnica de València, Spain). Led hands-on sessions on TinyML applications for IoT, prepared course materials, and mentored participants.
- **Embedded Machine Learning (TinyML) Workshop** — Jan 2024
  Teaching Assistant in collaboration between KAUST Academy and Prof. Marco Zennaro (ICTP, Italy).

Student Mentoring and Supervision:

- **LoRaWAN Gateway Mesh Experimental Research**, CTL Lab, KAUST — Fall 2025 – Spring 2026
  Supervised an undergraduate student with experimental research on LoRaWAN gateway mesh implementation developed by RAKWireless and ChirpStack.
- **AI Specialization Projects**, Artificial Intelligence Specialization, KAUST Academy — Summer 2025
  Mentored groups on AI projects: AI Ingredients & Nutrition Analyzer and Complete AI Simulation & Evaluation for IELTS exam.
- **LoRa Mesh Experimental Testbed**, ICTP, Italy — Summer 2025
  Supervised a TRIL Fellow on LoRa Mesh networks, resulting in a novel protocol called LoRa QTree.
- **LoRa Mesh Networks Research**, Saudi Summer Internship (SSI), KAUST — Summer 2025
  Supervised two undergraduate students on evaluation of open-source LoRa-mesh networking techniques using Meshtastic framework.
- **Delay-Tolerant Networking to Bridge the Educational Divide**, KAUST — Summer 2024
  Guided a high school student on research using Delay-Tolerant Networking (DTN) to deliver educational content to remote areas as part of International Baccalaureate Extended Essay.

REFERENCES

- Prof. **Mohamed-Slim Alouini**, Distinguished Professor, KAUST (MSc & Ph.D. advisor)
  Email: slim.alouini@kaust.edu.sa
- Dr. **Marco Zennaro**, Research Scientist, ICTP, Italy (Collaborator)
  Email: mzennaro@ictp.it
- Dr. **Mahmoud Eltokhey**, Postdoctoral Researcher, University of Oxford, UK (Collaborator)
  Email: mahmoud.eltokhey@eng.ox.ac.uk
- Prof. **George Turkiyyah**, Research Professor, KAUST (Teaching Mentor)
  Email: george.turkiyyah@kaust.edu.sa