Sara Hamdan



Computer, Robotics and Automation Engineer with two M.Sc. degrees and 10+ years of teaching, research, training, and industrial experience. Experienced in university-level programming, robotics, mechatronics, control, simulation, and engineering projects, with expertise in AI, software systems, computer vision, robotics, and industrial automation. Strong background in C++/Python/Java, ROS, AI/ML, and real-world systems.

Mobile: 0932499757
Email: sarah.m.hamdan@gmail.com
LinkedIn: www.linkedin.com/in/sara--hamdan

Education:

2021 - 2024 **M.Sc.** in Computational Science and Engineering, Faculty of Engineering, Koc University, Istanbul, Turkey.
- GPA: 4.00/4.00
- Thesis: Robotic Learning of Haptic Skills from Expert Demonstration for Contact-Rich Manufacturing Tasks.

2011 – 2015 **M.Sc.** in Robotic Engineering and Programming, Faculty of Mechanical and Electrical Engineering, Damascus University, Syria.
- GPA: 79.28% (Top rank in program).
- Thesis: Developing Java Agent Application Framework for Distributed Robotic System.

2004 – 2010 **B.Sc.** in Computer and Automation Engineering, Faculty of Mechanical and Electrical Engineering, Damascus University, Syria.
- GPA: 71.41% (8th rank in program).
- Project: Design and Implementation of an Instant Messaging System.

University Teaching & Academic Experience

2023 - 2025 **Project Researcher,** TUBİTAK 1501, Istanbul, Turkey: Development of Grinding & Polishing Module for Cobots.
- Developed robotic grinding and polishing solutions for cobots.
- Validated performance through simulation and experiments.

2021 – 2024 **Research & Teaching Assistant**, Faculty of Engineering, Koc University, Istanbul, Turkey
- Research at the Robotics and Mechatronics Laboratory and KUIS AI.
- Teaching for Robotics, Dynamic Modeling and Control, Computer-Based Simulation and Modeling, and Graduation Projects.
- Supported student projects, laboratory work, simulation, and robotics.

2017 – 2020 **Research and Teaching Assistant**, Faculty of Engineering, Ozyegin University, Istanbul, Turkey
- Teaching Programming, Mechatronics and Robotics.
- Contributed to EU-funded collaborative robotics research projects; WeCoRD and CoMRAde.
- Supported student projects and practical laboratory activities.

2015 – 2016 **Robotics Chief Trainer,** Innovast Technology, Turkey

- Designed and delivered hands-on robotics training using LEGO EV3.
- Developed robotics curricula for Grades 4–10.

2015 **Head of Robotics Club**, Yarmouk Private University, Damascus, Syria

- Taught robotics fundamentals, and supervised student robotics projects.
- Led practical workshops and technical activities.

2013 – 2015 **Robotics Lab Instructor**, Faculty of Mechanical & Electrical Engineering, Damascus University, Syria

- Delivered industrial robotics laboratory instruction using FESTO robots and pneumatic systems.
- Supervised hands-on laboratories and graduation projects.

Teaching Areas & Technical Skills

Programming & Software Engineering: C++, Python, Java, MATLAB, OOP, software engineering, distributed systems, databases, Git, Linux, Docker.

Web Technologies: REST APIs, WebSocket, CI/CD.

Artificial Intelligence & Computer Vision: AI, Machine Learning, Deep Learning, Reinforcement Learning, Computer Vision, PyTorch, TensorFlow, OpenCV.

Robotics & Control: Robotics, robot kinematics and dynamics, motion planning, trajectory generation, control systems, Human-Robot interaction, impedance/admittance control, modeling and simulation. ROS1/ROS2, Gazebo, RViz, MoveIt.

Automation & Mechatronics: Industrial automation, PLC, HMI, TIA Portal, sensors and actuators, pneumatics, Modbus, EtherCAT

Selected Publications, Patents & Academic Presentations

- 2025 — Patent: TÜRKPATENT, Robotic Food and Beverage Preparation System with Layered LLM Control Architecture.
- 2024 — Patent: TÜRKPATENT, TP24-1419: Centrifugal Safety Actuator.
- 2024 — Paper: IEEE CASE, Italy, Robotic Learning of Haptic Skills from Expert Demonstration for Contact-Rich Manufacturing Tasks.
- 2022 — Poster, KUIS AI, Koc University, Istanbul, Turkey, Learning Force Profile from Human-Robot Interaction for Robotic Polishing.
- 2020 — Presentation, Arcelik, Atolye 4.0, Turkey, Force-Induced Motion, Human-Robot Interaction, Robotic Polishing Task, UR5 & ROS.
- 2019 — Poster, ToRK, Turkey, Is UR5 Robot Arm Really Suitable for Physical Human Robot Interaction Applications?
- 2019 — Paper: IEEE SMC, Italy, Force Reference Extraction via Human Interaction for a Robotic Polishing Task: Force-Induced Motion.
- 2018 — Paper: IEEE EMBC, USA, Shoulder Glenohumeral Elevation Estimation based on Upper Arm Orientation.
- 2018 — Paper: ToRK, Turkey, Estimating Humerus Head Elevation in Human Shoulder Joints via Gaussian Process Regression.
- 2017 — Poster: DLR, Germany, CoMRAde, A Collaborative Mobile Robot Arm that can Learn Impedance Critical Tasks from Humans.

- 2016 — 4th Arab Robotics Conference, Qatar: Heterogeneous Swarm Robots — 1st Rank Award.
- 2014 — Damascus University Journal of Engineering Sciences: Analysis and Design a Software System for NXT Robot Based on Java Language. ISSN.1999-7302
- 2013 — 2nd Arab Robotics Conference, Amman, Jordan: NXT Robot Advanced Programming using Java.
- 2012 — 1st Arab Robotics Conference, Amman, Jordan Conference: Robotics in the Arab Worlds.

Professional Experience:

Jun. – Jul. 2026	**Robotics Software Consultant, RBware, Istanbul, Turkey** • Contributed to robotic welding software, calibration, geometric transformations, and robot-program adaptation. • Supported robotics software development and system integration.
Oct. 2023 – Jun. 2026	**Senior Software & Systems Engineer, MCFLY Robot Technologies, Istanbul, Turkey** • Developed robotics and automation software using C++, Python, ROS and Linux. Worked on robot kinematics, dynamics, trajectory generation, control and safety. • Developed AI, computer-vision and HRI applications for collaborative robots. • Contributed to industrial R&D projects and mentored junior engineers/interns.
Aug. 2022 – Sep. 2023	**Robotics Software Engineer, ILITRON Energy and Information Technologies Inc., Istanbul, Turkey** • Developed C++/Python modules for a 6-DoF cobot, including control, middleware, safety, and HW/SW integration. • Implemented ROS-based simulation, motion-control, testing, and debugging workflows for real robotic systems.
Sep. 2011 – Sep. 2015	**Computer Engineer, IT Department, Ministry of Finance, Syria** • Supported Oracle database systems and e-government software. • Contributed to public-sector IT systems and digital services.

Selected Professional & Academic Training

July 2026	PLC-Based Factory Automation Training: Üsküdar Innovation Center, Istanbul, Turkey.
Aug 2024	Workshop**:** “Patent Literacy and Research”, Erdem Kaya Patent Company, Turkish & European Patent Attorney, Istanbul, Turkey
Jul. 2020	EEML Summer School - Deep Learning & Reinforcement Learning, DeepMind, Virtual, Krakow, Poland
Jul. 2019	ETH Zurich Robotic Summer School “Real Robots, Real Environments”, Switzerland.
Jul. 2019	EEML Summer School. Deep Mind. Bucharest, Romania.
Oct. 2011	Internship: ‘Idea for Brainstorming,’ NXT Robotics Coach, Syria.
May. 2011	Internship: Syriatel, Syria. Network telecommunication infrastructure.

Oct. 2010	Internship: Shell, Syria, “Small Business Administration,”.
Aug. 2009	Internship, Al Mansoura University, Egypt: Linux, Computer networks (CCNA) & Web Programming,”.
Mar. 2009	Internship: “Design Integrated Network Solutions,” ABC, Syria.

Selected Educational & Outreach Activities

- 2017 – 2018: Volunteer at YGA (Young Guru Academy), Turkey: Supported STEM and social responsibility projects.
- 2015: Founder and Robotics Trainer: Robotic Club, Faculty of Engineering, Damascus University, Syria.
- 2015: Co-Organizer, “Science of Invention & Development” Workshop.
- 2015: Editor-in-Chief: “Arab Robotics Magazine, 1st issue”.
- Oct. 2014: Supervisor & Trainer: “Scientific Discovery Centre”, Ibra,Oman.
- 2010 – 2011: Robotics Instructor, Children's Rights Society, Damascus, Syria
- 2010 – 2016: Robotics Trainer, Organizer and Referee (WRO, FLL, OARC).

Personal Details:

Place and Date of Birth: Leipzig, Germany. August 1987

Nationality: Syrian.

Languages: Arabic (Native), English & Turkish (Advanced), German (Beginner)

Current Address: Damascus, Syria.