

Hassan Umari

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Summary

I'm a Software and Mechatronics Engineer with a strong foundation in robotics, embedded systems, and backend development. I bring full-stack problem-solving skills, from low-level drivers to full-fledged web interfaces, DevOps, and CI pipelines. My academic background includes a master's in Mechatronics Engineering with a thesis on autonomous robotic exploration, and I've published research in top venues like IROS and Robotics and Autonomous Systems.

Work Experience

Senior Software Engineer

Feb 2024 — Present

[Tabit GmbH](#) · client: [Infineon Technologies](#)

Munich, Germany

- Promoted from Software Engineer to Senior Software Engineer (Mar 2026).
- Main contributor to the design and development of a next-generation Python automation framework for Component Verification (CV) testing: a unified, channel-oriented instrument API built on the IVI standard, support for analog and digital-pattern stimuli, and a test bench abstraction with auto-detection of connected lab instruments.
- Built C driver extensions for instruments used in CV tests.
- Created CI pipelines for unit and integration tests, reducing testing time from 1hr to 10min.

Tech Stack: Python, Docker, C, Matlab, Javascript, Git, Gitlab, Jira.

Software Robotics Engineer

Apr 2021 — Oct 2022

[Agile Robots AG](#)

Munich, Germany

- Worked on Django-based Python app enabling graphical programming of robot tasks.
- Built Python micro-services for controlling robot workstation via web APIs (GraphQL + REST).
- Created Web-Apps with GUIs using: Vue JavaScript framework, Electron, HTML, CSS.
- Added unit and integration tests.
- Created CI pipelines.

Tech Stack: Python, DDS, Django, Docker, C++, Conan, Javascript, Vue, Grafana, Git, Gitlab, Jira

Software Developer

Dec 2019 — Apr 2021

[H-BRS University](#)

Bonn, Germany

- Part-time job.
- Worked on a Django-based information portal platform for internal employees.
- Extended Wagtail CMS with custom features (ex: full-text search for documents, drawio-based extension).
- Front-end adjustments: style refactoring.

Tech Stack: Python, Django, Javascript, Git, Gitlab, Vagrant, HTML, CSS.

Research Assistant Robotics

Apr 2017 — Feb 2019

[UAEU University](#)

Al-Ain, UAE

- Mechanical design, and prototyping using 3D printing.
- Designed electronic circuits and PCBs.
- Embedded programming (Arduino, ESP8266, Raspberry Pi).
- Robotics: navigation, pick and place, use of computer vision tools.
- Documentation (writing reports, BOM, scientific papers).

Tech Stack: Python, C++, ROS, OpenCV, MQTT, TCP/IP, UDP, Git.

Skills: CAD, 3D modeling (Fusion 360, Inventor, Creo), PCB (Eagle)

Earlier Experience

- **Research and Teaching Assistant**, [American University of Sharjah](#) – Sharjah, UAE (2015–2017)
- **Junior Automation Engineer**, Al-Wefaq Control Systems – Amman, Jordan (2014)

Skills

- **Programming Languages:** Python, C, C++, Matlab, JavaScript, Dart (Flutter)
- **Robotics:** Path Planning (A*, RRT*, RRT), Trajectory Tracking, Kalman-Filter, Particle Filter, ROS, DDS (RTI-Connex), OpenCV, MQTT, ModBus
- **Web Development:** Django, FastAPI, Flask, Vue, GraphQL, REST
- **DevOps:** Conan, GitLab, CI/CD, Docker, Grafana, Vagrant
- **Mechatronics:** CAD, Fusion 360, AutoCAD, Creo, Eagle, Serial Communication (SPI, UART, I2C), Control Theory (PID, adaptive control, state observer)

Education

[American University of Sharjah](#)

2015 — 2017

M.Sc. in Mechatronics Engineering

Sharjah, UAE

- GPA: 3.7/4.0 (Excellent)
- Thesis: Multi-Robot Map Exploration Based on Multiple Rapidly-exploring Randomized Trees

[Jordan University of Science and Technology](#)

2009 — 2014

B.Sc. in Mechanical Engineering

Irbid, Jordan

- GPA: 80/100 (Very Good)
- Thesis: System Modeling of a Variable Pitch Quadrotor

Publications

- Hassan Umari and Shayok Mukhopadhyay, **Autonomous Robotic Exploration Based on Multiple Rapidly-Exploring Randomized Trees** in Proceedings of the IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS), Vancouver, BC, Canada, 2017, pp. 1396-1402. doi: [10.1109/IROS.2017.8202319](https://doi.org/10.1109/IROS.2017.8202319).
- Mukhopadhyay, S., Umari, H. & Koirala, K. **Multi-robot Map Exploration Based on Multiple Rapidly-Exploring Randomized Trees**. SN Computer Science 5, 31 (2024). doi.org/10.1007/s42979-023-02193-2.
- Alnajjar, F., Umari, H., Ahmed, W. K., Gochoo, M., Vogan, A. A., Aljumaily, A., Mohamad, P., & Shimoda, S. (2021). **CHAD: Compact Hand-Assistive Device for enhancement of function in hand impairments**. Robotics and Autonomous Systems, 142, 103784. ISSN 0921-8890.

Full publication list: [Google Scholar](#)

Languages

- **Arabic:** Native.
- **English:** Proficient (97 TOEFL IBT, 2017).
- **German:** Intermediate (Goethe B1, 2026).