PERSONAL INFORMATION

Hassan Umari

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Google Scholar profile

Date of birth March 1991 | Nationality Jordan

WORK EXPERIENCE

Feb 2024 - Current

Software Engineer

Tabit GmbH | Munich, Germany

- Work as an external consultant for Infineon Technologies (Munich), a semiconductor manufacturer.
- Develop and support software frameworks and tools used by Component Verification (CV) engineers.
- Build C driver extensions for instruments used in CV tests.
- Create Matlab wrappers for instrument drivers compliant with the IVI driver specifications.
- Create CI pipelines for unit and integration tests.

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

Apr 2021 - Oct 2022

Software Robotics Engineer

Agile Robots AG | Munich, Germany

- Maintaining a Django-based python app enabling graphical programming of robot tasks
- Build python micro-services for controlling robot workstation via web APIs (GraphQL + REST)
- Create Web-Apps with GUIs using: Vue JavaScript framework, Electron, HTML, CSS
- Add unit and integration tests
- Create CI pipelines

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

Dec 2019 - Apr 2021

Software Developer

Bonn-Rhein-Sieg University of Applied Sciences | Bonn, Germany

- Part-time job
- Maintain a Django-based information portal platform for internal employees.
- Extend Wagtail CMS with custom features, examples: full-text search for documents, and add a drawio-based extension for editing diagrams.
- Front-end adjustments: style refactoring.

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

Apr 2017 - Feb 2019

Research Assistant - Robotics

IRI Robotics Laboratory, United Arab Emirates University | Abu-Dhabi, UAE

- **Duties:**
  - Mechanical design, and prototyping using 3D printing
  - Design 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)
- **Projects:***(link)*
  - 3D printed wearable hand assistive device for stroke patients
  - Designing a large cartesian 3D printer
- **Seminars and workshops I gave:**
  - Introduction to the Robot Operating System (ROS)
  - Introduction to Arduino

Tech stack: Python, C++, ROS, OpenCV, MQTT, TCP/IP, UDP, Git. **Skills**: CAD, 3D modeling (Fustion 360, Inventor, Creo), PCB (Eagle)

Feb 2015 - Dec 2016

Research and Teaching Assistant

Mechanical Engineering Department, American University of Sharjah | Sharjah, UAE

- **Duties:**
  - I was a working student (during my master's, assistantship program)
  - Course grading, Preparing laboratory manuals
  - Research focused mainly on my thesis
- **Projects:***(link)*
  - Adjustable speed-controlled (PID) four-bar mechanism
  - Position control of linear voice coil motor with online friction compensation (estimated using a partial-state observer)
  - Multi-Robot Map Exploration Based on Multiple Rapidly-exploring Randomized Trees (thesis)
- **Seminars and workshops I gave:**
  - Tutorial on the Robot Operating System (ROS)

Aug 2014 - Dec 2014

Junior Automation Engineer

Al-Wefaq Control Systems | Amman, Jordan

- PLC programming: Siemens Simatic S7-1200, TIA portal, HMI
- Testing panel boards
- Documentation (SAT, FAT, BOM)
- Prepare CAD drawings for panel boards (AutoCAD)

Jun 2013 - Aug 2013

Mechanical Engineer Intern

King Abdullah II Design and Development Bureau (KADDB) | Amman, Jordan

- **Projects:**
  - PI controlled self-balancing robot using complementary filter for angle estimation
  - Build a setup for identifying quadrotor's propeller thrust and torque coefficients

EDUCATION

Feb 2015 - May 2017

M.Sc. in Mechatronics Engineering

American University of Sharjah | Sharjah, UAE

- **CGPA:** 3.7/4.0 (Excellent)
- **Main Subjects:**
  - Advanced Control Systems
  - Adaptive Control Systems
  - Modeling and Simulation of Dynamical Systems
  - Embedded Systems
  - Automated Manufacturing Systems
- **Thesis topic:** Multi-Robot Map Exploration Based on Multiple Rapidly-exploring Randomized Trees

Sep 2009 - Jun 2014

B.Sc. in Mechanical Engineering

Jordan University of Science and Technology | Irbid, Jordan

- **CGPA:** 80.8/100.0 (Very Good | Twice on semester's honor list)
- **Main Subjects:**
  - Machine Design
  - Mechanical Vibrations
  - Automatic Control
  - Microcontrollers
  - Robotics
  - Circuit Analysis and Electronics
  - Automation
- **Senior design project:** System Modeling of a Variable Pitch Quadrotor

2008 - 2009

High School Certificate, Science Stream

Irbid Secondary School | Irbid, Jordan

- **CGPA** 92.6/100.0 (Excellent)

skills on next page ..

PROFESSIONAL SKILLS

Software Developmet

- LANGUAGES: Python, C++, Javascript, Embedded C, MATLAB, Assembly, HTML, CSS, Markdown, LaTeX
- WEB DEV: Django, Wagtail, Flask, Starlette, REST, GraphQL, Graphene, Ariadne, Vue
- COMM: DDS, MQTT, TCP, UDP
- ROBOTICS: RRT, A*, BFS, DFS, OpenCV, ROS, Numpy, Navigation, Autonomous Exploration
- DevOps: Conan, Git, CI/CD, Docker, Grafana, Vagrant

Robotics & Mechatronics

- CAD: AutoCAD, Fusion360, PTC Creo, Eagle
- Interfacing: Analog/Digital Sensors, Modbus, UART, SPI, I2C
- Control: MATLAB, Simulink, Mathematical Modeling, State Observer, PID, Adaptive Control
- Hardware: Arduino, esp8266, PIC24, NI MyRIO, Motorola 68HC11, PLC: Siemens S7-1200, Raspberry Pi, dSpace

PUBLICATIONS

1. 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
2. Mukhopadhyay, S., Umari, H. & Koirala, K. **Multi-robot Map Exploration Based on Multiple Rapidly-Exploring Randomized Trees**. SN Computer Science 5, 31 (2024). https://doi.org/10.1007/s42979-023-02193-2
3. 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.
   https://doi.org/10.1016/j.robot.2021.103784
4. Hassan Umari, "**Multi-robot Map Exploration Based on Multiple Rapidly-Exploring Randomized Trees**," M.S. thesis, Dept. Mech. Eng., American Univ. of Sharjah, Sharjah, UAE, 2017

AWARDS

A member of a 2nd place winner- team, at URC 2013 robotics competition, in the ball collection theme. Amman, Jordan

LANGUAGES

Arabic	Native
English	Proficient (97 TOEFL IBT , 2017)
German	Basic (B1)