

## PERSONAL INFORMATION

## Hassan Umari



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[Google Scholar profile](#)

Date of birth March 1991 | Nationality Jordan

## WORK EXPERIENCE

Feb 2024 - Current

### Software Developer

**Tabit GmbH (External Employee for Infineon Technologies) | Munich, Germany**

- Work as an external employee for our client, Infineon Technologies, a semiconductor manufacturer.
- Develop and support software frameworks and tools used by component verification engineers to enhance their workflows.
- Develop and maintain MATLAB drivers for lab instruments used in post-silicon component verification.
- Create CI pipelines for unit and integration tests.

Apr 2021 - Oct 2022

### Software Robotics Engineer

**Agile Robots AG | Munich, Germany**

- Work on the backend side for a web application that allows robot operators to program robot tasks.
- Create python micro-services exposing GraphQL APIs.
- Use DDS as a middleware for communication, and create different nodes using this middleware.
- Add unit and integration tests.
- Create CI pipelines.
- Program robot tasks.
- Python frameworks: Django, Starlette, Ariadne, Graphene.
- Occasionally created small Web-Apps with GUIs using: Vue JavaScript framework, Electron, HTML, CSS.

Dec 2019 - Apr 2021

### Python Developer

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

- Part-time student job
- Develop Web apps using Python/Django
- Use Wagtail CMS
- Do minor front-end side adjustments

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 to my projects](#))

- 3D printed wearable hand assistive device for stroke patients
- Designing a large cartesian 3D printer

#### Seminars and workshops:

- Introduction to the Robot Operating System (ROS)
- Introduction to Arduino

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 (happened once)
- Research focused mainly on my thesis

### Projects: [\(link to my projects\)](#)

- 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:

- 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

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Feb 2015 - May 2017

## M.Sc. in Mechatronics Engineering

American University of Sharjah | Sharjah, UAE

**CGPA 3.7/4.0 (Excellent)**

### Major 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)**

### Major 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)**

Software Developmet

Python

C+

Javascript

Embedded C

MATLAB

Assembly

HTML

CSS

Markdown

LaTeX

Django

Wagtail

Flask

Starlette

REST

GraphQL

Graphene

Ariadne

Vue

DDS

MQTT

TCP

UDP

RRT

A\*

BFS

DFS

OpenCV

ROS

Numpy

Navigation

Autonomous Exploration

Conan

Git

CI/CD

Docker

Grafana

Vagrant

LANGUAGES

WEB DEV

COMM

ROBOTICS

DevOps

Robotics & Mechatronics

AutoCAD

Fusion360

PTC Creo

Eagle

Analog/Digital Sensors

Modbus

UART

SPI

I2C

MATLAB

Simulink

Mathematical Modeling

State Observer

PID

Adaptive Control

Arduino

esp8266

PIC24

NI MyRIO

Motorola 68HC11

PLC: Siemens

Raspberry Pi

dSpace

CAD

Interfacing

Control

Hardware

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

English

German

Native

Proficient (97 TOEFL IBT , 2017)

Basic (B1)