PERSONAL INFORMATION

Hassan Umari

Munich, Germany

oh91@windowslive.com

hasauino.github.io

linkedin.com/in/hassanomari

Google Scholar profile

Date of birth March 1991 | Nationality Jordan

WORK EXPERIENCE

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

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)

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)