MU'MEN Z. AL JARAH

PhD in Computer Science

David Cheriton School of Computer Science
University of Waterloo
200 University Avenue West
Waterloo, ON, N2L 3G1
Canada
+1 (226) 752-5051
mumen.aljarah@uwaterloo.ca
https://cs.uwaterloo.ca/~mzaljara/

PERSONAL STATEMENT

I am looking for excellence and creativity in Computer Science and Engineering with hard work, perseverance and dedication and to be part of the success in an environment of growth and excellence. In addition to this, I am seeking a competitive and challenging environment where I can use my talents, skills and knowledge to help the organization that I will work with it to be successful and serve this organizations to establish an enjoyable career for myself.

EDUCATION

PhD, Computer Science, University of Waterloo, ON, Canada (Sep. 2022 – Present)

- Part of Waterloo Advanced System Lab (WASL) under the supervision of Prof. Samer Al-Kiswany.

BSc, Computer Engineering, Jordan University of Science and Technology, Irbid, Jordan (Sep. 2012 – May 2017)

- Graduation Project: Special Purpose Architecture for Compression Algorithm.
- GPA: 84.1% (Rank: 5/72)

High School Certificate (Scientific Stream), Irbid, Jordan (Sep. 2011 – Jul. 2012)

- GPA: 93.8%

RESEARCH INTERESTS

Computer Networks, Distributed Systems, Artificial Intelligence, Autonomous Systems, Navigation Solutions, Image Processing and Embedded Systems.

EXPERIENCES

University of Waterloo, ON, Canada

Sep. 2022 – Present ***Research Assistant***

- Working with the research team of the Waterloo Advanced System Lab (WASL) under the supervision of Prof. Samer Al-Kiswany. My research interests focus on building high performance, reliable, and scalable distributed systems. I am passionate about creating highly efficient systems and finding innovative solutions to complex problems.

Sep. 2022 – Present ***Teaching Assistant***

- Working as teaching assistant for CS245: Logic and Computations and CS636: Introduction to Networks & Distributed Systems courses.

Mazaari Autonomous Robotics System, MARSRobotics , Irbid, Jordan

July 2019 – June 2022 Technical Manager

- Leadership, Planning and Organization of an engineering team consist of more than 25 engineers who are working on high level projects and state of the art technologies. Moreover, cooperative with the team members to be able to carry out the assigned tasks to be executed effectively in proportion to the objectives of the organization.

- Managing and supervising advanced projects in different fields of engineering such as:

1. Design and development of unmanned autonomous systems in addition to other systems such as INS/GPS solution, the ground control station, and the communication link solutions.
2. Provide an integrated services by developing professional solutions to generate high-resolution 2D/3D maps using aerial images to be used in different applications.

- Performing many administrative tasks such as: Financial Management, Human Resources, Liaison officer with many external public and private organizations in addition to some other duties.

July 2017 – June 2022 Computer Systems Engineer

- Working on design and develop a fully embedded systems for autonomous vehicles systems using professional microprocessors and microcontrollers and integrate them with different types of sensors and actuators.

- Creating a Simulink toolbox for different types of microcontrollers and microprocessors to be used in many applications.

- Developing an INS-GPS system for autonomous systems and integrating a turnkey GNSS solution (RTK and PPK) for unmanned systems.

- Supporting in the development of Ground Control Station for the unmanned systems using C#.

- Develop a solution for LiDAR sensor to be integrated with different types of unmanned autonomous systems.

- Develop a camera payload system using FPGA technology to speed up the image processing algorithms.

- Working on develop image stitching algorithm in addition to use these images in object tracking algorithms using gyrostabilizer 360 camera.

Jordan University of Science and Technology, Irbid, Jordan (Feb. 2017 – Apr. 2017)
Center of Excellence for Innovative Projects.

Feb. 2017 – Apr. 2017 Trainee

- Integrate a PID controller for autonomous robotics.

- Working on Microcontrollers and Inertial Measurements Unit (IMU) in both sides (software and hardware) and install them on real applications especially in Unmanned Aerial Vehicles (UAV) applications.

GRANTS AND AWARDS

- Deanship's Honorary List: 2015-2017
- First Class Scholarship: Honored by the University's President for the top students, Dec. 2016.
- First Students Honoring: Honoring by the Students Union of university for the top students.

PUBLICATIONS

Mabdeh Ali, Al-Fugara A'kif and **Al jarah Mu'men** "Object-Based Classification of Urban Distinct Sub-Elements Using High Spatial Resolution Orthoimages and DSM Layers." Journal of Geographic Information System, vol. 10, no. 04, 2018, pp. 323–343., doi:10.4236/jgis.2018.104017.

PROJECTS

- Design and Development of Unmanned Vehicles System.

- Flight control algorithm.
- MATLAB Toolbox for flight control processor.
- PID controller for fixed-wing plane.
- Flight mode for UAVs.
- Hardware in the Loop Simulation (HILS) for autopilot system.

- Design and Implementation of Navigation Solution (GPS-INS) System.

- Working on gyroscope, accelerometer, and magnetometer sensors with calibration process.
- Kalman filter algorithm to increase the accuracy of navigation.
- Develop an adaptive algorithm for GPS-INS solution.
- Integrate a GPS-INS system with ground and aerial vehicles.

- Design and Develop FPGA-Based Video Link system.

- Develop a video processing algorithm for transmission between UAV and Ground station.
- Integrate camera with FPGA board to make high efficiency compression on the transmitted video.

- Integrate a LiDAR sensor with Autonomous Systems.

- Develop a solution for LiDAR data capturing.
- Integrate GPS-INS with LiDAR to get referenced and calibrated data.
- Working on LiDAR Data processing and generate 3D Models.

- Design and Developing of Aerial Mapping Solution.

- Image capturing with high-resolution.
- Geotagging the generated image with high accuracy GPS data using GNSS system in Real Time Kinematic (RTK) and Post Processing Kinematic (PPK).
- Do an image processing algorithm on the generated image to generate many products like: orthophoto, 3D Models, point cloud.

- Implementation and Design a School Attendance System.

- Design Graphical User Interface (GUI) for the System.
- Build the Database using MySQL Server.
- Connect the Database with C# Program.
- Writing a Report for the whole project with full documentation.

- Development and Implementation a Car Rental System.

- Using and Applying the Object-Oriented Programming principles (OOP).
- Choosing an appropriate System Development Life Cycle (SDLC) methodology for the project.
- Pass through all stages of software development from planning and analysis, Design, Implementation, Testing , Deployment and Maintenance.
- Writing a full program using C# programming language in OOP style.
- Writing a full documentation for the project.

- Design and Implementation a system to be used by an intelligent agent to play a game.

- Apply the artificial intelligence principles in a practical side.
- Using a suitable algorithm to solve the problem.
- Implement the algorithm in C# program.
- Connect the program with user interface to verify from the program.

CERTIFICATES

- Certification of completion a *"Pix4Dmapper Fundamentals"* in Image processing and analyzing.
  Pix4D Company (2019).

** Pix4D is a specialized company in aerial image processing (RGB, Thermal and Multispectral) and producing a high-resolution aerial maps and 3D Models.*

- Certification of training entitled *"English Comprehensive Conversation"* (54 training hours).
  The Consultation and Training Center at the German Jordanian University,

TECHNICAL SKILLS

- High-level languages (C, C++, JAVA and C#)
- Web Development (HTML, JavaScript, PHP and ASP.net)
- Database (Oracle SQL Development)
- Scripting languages (Shell Script - used in UNIX Operating System)
- Computer Networks tools (Cisco Packet Tracer, Wireshark)
- Microcontrollers and microprocessors programming (PIC, Arduino, Analog devices processors).
- MATLAB and Hardware Description Language (VHDL and Verilog)

SOFT SKILLS

- Work effectively as team member.
- Documenting and writing reports in a systematic and structured manner.
- Presentation, Listening, Friendliness, Confidence and Open-Mindedness.
- Organized and prioritized personal schedule.
- Ability to work well under pressure.
- Self-motivation and ability to take the initiative.

CONFERENCES, WORKSHOPS AND SYMPOSIUMS

- The International Conference on Information and Communication Systems (ICICS 2016 and 2017), Jordan University of Science and Technology, Irbid - Jordan.
- 10th IEEE International Design & Test Symposium (IDT'15), December 14-16, 2015, Dead Sea, Jordan.
- Participating in many scientific days in different universities.

REFERENCES

Available upon request.