Maria Alabdulrahman

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Areas of Interest

- Computer Engineering
- Software Engineering
- Robotics
- Artificial Intelligence

Portfolio Links

LINKEDIN: https://www.linkedin.com/in/maria-alabdulrahman-843165109/

GITHUB: https://github.com/mariaalabdulrahman **WEBSITE:** https://mariaportfolio.cyclic.app

SCHOLAR: https://scholar.google.com/citations?user=c5PnD-0AAAAJ&hl=en

Education

- **3.9+/4**, **Bachelor of Science**, Prince Mohammad Bin Fahd University
  - **Double Major** in **Computer Engineering** and **Software Engineering**
  - ABET Accredited Program
  - Expected graduation date: May 2024
  - Dean's Honor List Student

Experience

January 2023 – Present: **Part-Time Research Assistant,** Prince Mohammad Bin Fahd University
June 2022 – August 2022: **Robotics Engineer Intern**, Robotics Lab at Prince Mohammad Bin Fahd University

Skills/Tools

Machine Learning	PyTorch, Scikit-Learn, Pandas, NumPy
IoT and Robotics	Arduino, Raspberry Pi
Web Development	Flask, HTML, JS, jQuery, CSS
Languages	Java, Python, JavaScript
3D Modeling	TinkerCad, Fusion360
Productivity Tools	Word, Excel, PowerPoint, Overleaf, Canva

Projects

- **Segmentation and Classification of Potholes using Instance Segmentation Methods and Decision Trees**
  - Images depicting potholes were collected (17400 images). An Instance Segmentation model was trained (YoloV8).
  - Structural features such as pothole area, height and width were extracted from the segmented images.
  - A decision tree classifier is trained on the extracted features; highest accuracy yielded was 98.9%.
- **Haptic VR glove for Unity using Arduino**
  - A glove was constructed using IMUs and flex sensors which collected hand movement data

    - The data was fed to a Unity environment, where a virtual hand reflects the hand movement data collected from the glove
    - Events in the game result in haptic feedback on the glove
- **Inventory Management System using Deep Learning (No QR/Barcodes)**
    - Items are recognized by a raspberry pi through a live video feed from a webcam
    - Users can check-in and check-out items. The inventory database is updated accordingly
    - Inventory, stock, check-outs, and user information is displayed on a web application
    - New items can be registered by an admin using the 'Register Item' feature. Images of new items are captured which are used to retrain the deep learning model
- **Simulation-based learning environment for Operating System Algorithms**
    - Web application that displays interactive simulations for Operating Systems algorithms
    - Simulations include Job Scheduling, Memory Page Replacement, Round Robin, etc
- **Airline Management System**
    - Web application for airline management with a backend managed by a Flask server
    - SQLite database with seven entities manages the airline system
- **Electronic Xylophone with LCD using Arduino**
    - A system that is designed to teach beginners how to use a xylophone
    - An array of momentary switches correspond to a note on the xylophone
    - LCD displays the note played by the user
- **Robotics Lab Stock Management Web Application**
    - A NodeJS based server handles GET and POST requests from users that borrow items from the lab
    - Displays stock information of robotics lab
    - Gives controlled access to admins to update stock information

Research Publications

- Alotaibi, L., **Alabdulrahman, M**., Hasanaath, A. A., Tohmeh, S. B., & Mohammad, N. (2022, December). **Low Cost and Scalable Haptic VR Glove**. In *2022 14th International Conference on Computational Intelligence and Communication Networks (**CICN**)* (pp. 343-349). **IEEE**.

Achievements & Awards

- **First Place in IEEE Coding Competition,** IEEE (2022)
- **SDAIA-KAUST Academy Introduction to AI Bootcamp,** KAUST (2022)
- **SDAIA-KAUST Academy Advanced Artificial Intelligence Course,** KAUST (2023)
- **Networking Academy Course Cybersecurity Essentials,** Cisco (2022)
- **Dean's Honor List**, PMU (2021-2023)
- **International Baccalaureate Diploma,** IBO (2020)

Extra-Curricular Activities

- President of **Undergraduate Research Society, PMU**
- Vice President of **Robotics Society, PMU**
- Secretary of **IEEE Women in Engineering Chapter, PMU**
- Core member of **Google Student Developer Club, PMU**
- Member of **IEEE Robotics and Automation Society**
- Mentor in the **CS1 Help Session Program, Computer Collaro Club, PMU**

- Main-Attack of the **Basketball Team, PMU**
- Managed an AMA booth with colleagues for the **Robotics Society, PMU**
- Organized Arduino Workshop held by **IEEE Women in Engineering Chapter, PMU**