

Lara Alotaibi

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Portfolio Links

LINKEDIN: <https://www.linkedin.com/in/lara-alotaibi-380121242/> **GITHUB:** <https://github.com/Larito>

WEBSITE: <https://lara-portfolio.github.io>

SCHOLAR: <https://scholar.google.com/citations?user=YrH5p9gAAAAJ&hl=en&authuser=1>

Education

- 3.67/4, **Bachelor of Science**, Prince Mohammad Bin Fahd University (PMU) 2020-2024
 - **Double Major in Software Engineering and Computer Engineering**
 - ABET Accredited Program
 - Dean's Honor List Student
- 91.88/100, **American High School Diploma**, Saad National School for Girls 2018-2020

Experience

January 2023 - October 2023: **Part-Time Research Assistant**, Prince Mohammad Bin Fahd University

June 2022 – August 2022: **Robotics Engineer Intern**, Robotics Lab at Prince Mohammad Bin Fahd University.

June 2023 - August 2023: **Data Scientist Intern**, Saudi Aramco

Skills/Tools

Web Development	Flask, HTML, JS, jQuery, CSS, ASP.NET
Artificial Intelligence	PyTorch, Sklearn, Pandas, NumPy, Tensorflow, Prompt Engineering
Languages	Java, Python, JavaScript, C#
3D Modeling	TinkerCad, AutoCad Fusion360
Electronics and Robotics	Arduino, Raspberry Pi, ROS2
Productivity Tools	Word, Excel, PowerPoint, Overleaf

Relevant Projects

- **DASH, Quadruped Robot Development Kit**
 - Led 3D modeling, printing, and assembly processes for precise hardware integration.
 - Integrated Robotics Operating System 2 (ROS2) for core functionalities, including gesture control and person following.
 - Implemented vision-based systems with a camera and touchscreen UI for enhanced interaction.
 - Developed a custom mobile app enabling remote control and seamless user interaction.
 - Focused on kinematic modeling and motor control for stable and dynamic movement.
- **Voice-Controlled Robotic Vehicle (VCRV)**
 - to enhance mobility for individuals with disabilities.
 - Utilized ESP8266 NodeMCU 1.0 microcontroller for central control and WiFi-enabled communication.
 - Integrated voice recognition module for precise execution of voice commands.
 - Implemented ultrasonic sensor for accurate obstacle detection and avoidance.
 - Designed a user-friendly GUI to facilitate easy interaction with the vehicle.

- Achieved real-time responsiveness and minimal latency in command execution.
- **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%.
- **Arabic Offense Text Identification and Classification**
 - Evaluate Bag-of-Words (BoW), TF-IDF, custom embeddings, and pretrained embeddings
 - Highest accuracy of 89.23% achieved with Random Forest on 3 classes
 - Reduction of classes from 5 to 3 improved model performance
 - Random Forest consistently performed well, with competitive results from Logistic Regression and SVM
- **Traffic Detection**
 - YOLOv8n model was employed for the project's training phase
 - Execution of training was carried out on Kaggle, utilizing the T4 GPU
 - Model demonstrated good performance, especially on vehicle classes (Bus, Car, Bicycle, Motorbike) in terms of precision, recall, and F1 score
 - It yielded a mean average precision of 83.5%, precision of 85.4%, and recall of 75.3%.
- **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

Research

Publications

- **Lara Alotaibi, et al, "Low Cost and Scalable Haptic VR Glove", International Conference on Computational Intelligence and Communication Networks, CICN, Dec 2022, Khobar KSA**
- **Lara Alotaibi, et al, "Cyberattacks Using ChatGPT: Exploring Malicious Content Generation Through Prompt Engineering", International Conference in Emerging Technologies for Sustainability and Intelligent Systems, ICETIS, Jan 2024, Kingdom of Bahrain**

Achievements & Awards

- **SDAIA-KAUST Academy Introduction to AI Bootcamp, KAUST (2022)**
- **Dean's List Honors, Prince Mohammad Bin Fahd University (2020, 2023)**
- **MISK Distinctive College Prep Program, (2018)**
- **Harvard Summer School Scholarship, completed 2 college-level courses (2018)**

Extra-Curricular Activities

- Founder and President of **Robotics Society, PMU**
- **Tutoring CS1 Students, College of Computer Engineering & Sciences PMU**
- Facilitated Reinforcement Learning Workshop organized by **Robotics Society, PMU**
- Conducted 3D Printing Workshop organized by **Robotics Society, PMU**
- Vice President of **Undergraduate Research Society, PMU**
- Treasurer of **IEEE Women in Engineering, PMU**
- Mentor in the **MISK mentoring program**