

# Muhammad Fadli Arsani

San Diego, CA | [LinkedIn](#) | [Portfolio](#) | fadlialim0029@gmail.com

## EDUCATION

### University of California San Diego

San Diego, CA

B.S Electrical Engineering - Machine Learning & Controls (GPA: 3.92)

Graduation Date: June 2024

- Relevant courses: Machine Learning Algorithms, Deep Learning in Computer Vision, Robotics, OOP Programming in C++, Python For Data Analysis, Controls Theory, Linear & Non-Linear Optimization, Signals & Systems, Data Structures & Algorithms, C Programming, Intro To Autonomous Vehicles, Circuits Theories, Probability & Statistics, Calculus (I, II, III), Linear Algebra, Physics, Differential Equation.
- Organizations/Awards: **Warren College Honors Society**, awarded **Provost Honors** every quarter.

## WORK EXPERIENCE

### Research Software Engineer

San Diego, CA

Existential Robotics Lab, Contextual Robotics Institute (CRI) UC San Diego

January 2023 – Current

- Built implementations & visualizations of baseline **robotics algorithms** for **localization, mapping, & controls**.
- Implemented various robotics algorithms like **Particle Filter, SLAM, Kalman Filter, A\* search** etc.
- Programmed the **navigation environment** in **PyBullet** real-time physics simulation engine.

### Research & Software Engineer Intern

San Diego, CA

Autonomy Lab, Contextual Robotics Institute (CRI) UC San Diego

March 2022 – September 2022

- Trained a **Reinforcement Learning policy** on the **Unitree A1** robot allowing it to traverse challenging terrains.
- Collected **real-world data** to bridge the gap between **Sim2Real** and uncertainties in the real world.
- Used **GPU clusters** and other MLOps tools like **Kubernetes** and **WANDB** to train the models.
- Modified our terrains in the **NVIDIA Isaac Gym**, allowing the robot to adapt to more challenging terrains.

## PROJECTS

### BEDSR - Budget Enhanced Deep Residual Networks for Single Image Super-Resolution

Winter 2022

PyTorch, Python, Deep Learning, Computer Vision

- Designed and implemented a **resource-constrained approach** of Bee Lim et. al. **EDSR** paper.
- Achieved an average peak signal-to-noise ratio (**PSNR**) of **33.43 dB** on popular SR dataset.
- Built and wrote the entire module, training & testing scripts, data preprocessing, etc. from scratch.

### Jetson-Nano-Powered Self-Driving RC Car

Spring 2021

C++, Python, ROS, Jetson Nano, Brushless DC Motor, etc.

- Wrote a **ROS package**, utilizing **OpenCV** library for **lane switching** and **line detection**.
- Implemented a **Python module** which handles **sending of messages**, (ex: steering, throttle) to the **ESP32**.
- Built a **ROS client** for the **ESP32** that **enables communication** of steering and throttle messages with **ROS**.
- Deployed **Deep Learning Models** on the **Jetson-Nano** attached to the RC Car for autonomous driving.

### Auto-Encoders Flavors

Current (in-progress)

PyTorch, Python, Deep Learning

- Implemented variants of autoencoder, namely: **Vanilla AE, Sparse AE, Denoising AE, Variational AE, Deep Convolutional AE, etc.**
- Documented, visualized, and explained the different flavors of autoencoders.

### Smart Wearable

Fall 2021

C, Python, ESP32, OLED Display, Accelerometer, etc.

- Used **photodetector** and **Digital Signal Processing** to **measure and filter heart rate** in real-time.
- Trained the filtered data via **Gaussian Mixture Models (GMM)**, and used **LOSOV** for validation.
- Provides **live weather forecast** and **time & date display**, achieved through **OpenWeather Map API**.

## SKILLS

**Skills:** Python, C, C++, MATLAB, PyTorch, ROS/ROS2, Embedded Programming, Electrical systems testing, SOC/microcontrollers, Kubernetes, WANDB, Ubuntu (main computer).