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Donipolo Ghimire

Graduate Student Researcher

GitHub: donipologhimire
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PhD student in Controls, Dynamics and Optimization, *University of California Irvine* 2020 - Present
Master of Science in Mechanical and Aerospace Engineering, *University of California Irvine* 2020 - 2022
Bachelors of Science in Mechanical Engineering *Howard University* 2015 - 2019

Skills

Tools and Languages	Python, MATLAB, C++, Robots OS (ROS), Gazebo, Node JS, CAD, ANSYS
Research Interest	Motion Planning, Mathematical Optimization, Machine Learning, Graph Theory
Coursework	Machine Learning, Graph Theory, Motion Planning, Optimal Controls, Optimization, State Estimation and Filtering,Probabilistic Learning, Non Linear Controls, Linear Algebra, Dynamics

Publications

1. **Ghimire, D.** and Kia, S.S., 2023, December. Stein Coverage: a Variational Inference Approach to Distribution-matching Multisensor Deployment. https://arxiv.org/pdf/2312.07001.pdf

2. **Ghimire, D.** and Kia, S.S., 2023, June. Optimal Multi-Sensor Deployment via Sample-Based Quality-of-Service Distribution Matching. In 2023 European Control Conference (ECC) (pp. 1-6). IEEE. 10.23919/ECC57647.2023.10178375

Technical Experience

Graduate Student Researcher **SEP 2020 — Present**
University of California Irvine *Irvine, CA*

- Working on developing deployment strategies for multi robot system and also creating policies for motion planning and coverage path planning.
- Worked on assignment problem to maximize coverage service provided by UAVs through matching the orientation and position of UAV footprint. Presented this work in ECC 2023 Romania.

Visiting Graduate Student Researcher **JUL 2022 — NOV 2022**
NASA Jet Propulsion Laboratory *La Cañada Flintridge, California*

- Worked with a team to detect and localize the objects of interest like rocks, minerals, and geologic landforms using visual, thermal or wireless signals in perceptually degraded environments like planetary surfaces or caves of Mars and Moon under network and computation constraints.
- Created a pipeline for detection and relative object localization module that can be easily integrated into state of the art robots like spot or husky robot which can be deployed for future planetary exploration of Martian or Lunar surfaces.

Research Associate **OCT 2019 — MAY 2020**
Howard University *Washington, DC*

- Worked on fabrication and characterization of Surface Relief Fiber Bragg Grating sensors.
- The purpose of the sensor is to detect a drug called, Fentanyl.
- Utilized optical fiber assisted UV lithography and polymer replication process for fabrication.
- Presented work in the SPIE Defense + Commercial Sensing Conference.

Teaching Experiences & Projects

Teaching Assistant **JUL 2021 — SEP 2021**
University of California Irvine *Irvine, CA*

- Taught summer outreach program focused on robot motion planning algorithms and programming (Python) to economically disadvantaged students from the Santa Ana School District.

Hand Gestured Based Robot Teleoperation **MAY 2021 — JUN 2021**
University of California Irvine *Irvine, CA*

- Classified simple Hand Gesture (Left, Right, Forward) by using Feed Forward Neural Network with three hidden layers, and K-Nearest Neighbor Algorithm and implemented the trained model to control a simple Turtle-bot using above hand gestures.
- The hand-gesture data was collected using Ultrawide Band Sensor to measure the relative distance measurement based on Time of Arrival Algorithms.

Professional Activities

UCI Beall Applied Innovation: Graduate Entrepreneurial Program Organizer 2021 — 2022
MAE Graduate Student Association, UCI: Program Organizer Winter 2022
American Society of Mechanical Engineers, Howard University: Program Chair Fall 2017 — Spring 2019