Devon Gardner

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OBJECTIVE

To work on interdisciplinary robotics problems with the JHU Applied Physics Laboratory using C++ embedded systems software development, robot kinematics, and machine learning.

EDUCATION

Bachelor of Arts in Computer Science — May 2023
New College of Florida - Sarasota, FL
Honors Thesis: Comparative Analysis of Robotic Arm Control Architectures

Associate of Arts — August 2020
State College of Florida - Bradenton, FL

RELATED COURSES & SKILLS

Robot Kinematics; Embedded Systems; Computer Architecture; Software Engineering; Machine Learning for Visual Thinkers; Object-Oriented Programming and Design,

Skills: C++, Python, Java, Javascript, Embedded Systems, Linux OS, GitHub, ROS

SOFTWARE EXPERIENCE

Research Assistant — May 2021 – August 2021
University of South Carolina Center for Computational Robotics — Columbia, SC

- Collaborated with team of graduate researchers on marine robot computer vision research project
- Produced training dataset of underwater cave speleothem consisting of 24 thousand labels of four classes of interest
- Trained YOLOv5s object detection model on training data resulting in mean average precision of 0.85, which allowed model to be used as part of larger research project
- Wrote research paper and created conference poster to convey process and findings at multiple symposiums attended by researchers, graduate students, and professors

WidowX 200 Robot Arm Control — Present

- Created helper library for DynamixelSDK to simplify usage of Dynamixel motor serial communication
- Applied linear regression to recorded robot arm joint angles over time to produce Gaussian mixture model based motion primitives for preforming actions without human control
- Computed three dimensional coordinates of robot arm end effector using Denavit-Hartenberg based forward kinematics
- Evaluated performance of various motion primitives through root mean square error metric

Machine Learning for Visual Thinkers Course — Fall 2020

- Implemented linear regression, principle component analysis, k-means clustering, k-nearest neighbors classification and naive bayes classification algorithms from the ground up
- Preprocessed raw data for analysis through aforementioned algorithms
- Wrote reports analyzing the results of these algorithms applied to various real world datasets
- Reports and algorithm implementations found on my GitHub

ADDITIONAL EXPERIENCE

Supplemental Instruction Specialist — October 2019 - Present
State College of Florida Academic Success Center — Bradenton, FL

- Tutor college level students in Calculus 2 level math and below, Physics with Calculus, and Introductory and General Chemistry
- Assist computer science students with programming concepts, structure, and syntax of Python and Java.
- Provide assistance in navigating and using Microsoft Word, Microsoft Excel, and Canvas by Instructure