Devon Gardner

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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

Courses: Robot Kinematics, Embedded Systems, Computer Architecture, Software Engineering, Machine Learning for Visual Thinkers, Object-Oriented Programming and Design
Skills & Technologies: C++, Python, Java, Javascript (React), GNU/Linux OS, Git, 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
- Attended Robotics: Science and Systems 2021 conference

WidowX 200 Robot Arm Control — Spring 2021 - 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
- Evaluated performance of various motion primitives through root mean square error metric
- Computed three dimensional coordinates of end effector using Denavit-Hartenberg based forward kinematics
- Implemented Jacobian based inverse kinematics for converting three dimensional coordinates to joint angles while accounting for singularities

Red Tide Dashboard

- Designed and implemented a full-stack web application to provide users a dashboard for keeping track of red tide activity on Twitter, YouTube, and Spotify using React, AWS, and MongoDB
- Aggregated data for storing in MongoDB and displaying to the user through React from multiple sources through API calls
- Applied Agile/Scrum methodologies in a 3 person team
- Negotiated features and deadlines with client

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 by removing datapoints with non-numeric values and normalizing by z-score or range
- Wrote reports analyzing the results of various algorithms applied to various real world datasets

ADDITIONAL EXPERIENCE

Teaching Assistant – Computer Systems, Architecture, and Digital Hardware — Fall 2022
New College of Florida – Sarasota, FL

- Supports the professor by grading and supervising workshops
- Guides students during office hours through thorough understanding of course topics

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

- Tutors college level students in Calculus 2 level math and below, Physics with Calculus, and Introductory and General Chemistry
- Assists computer science students with programming concepts, structure, and syntax of Python, Java, and C++
- Provides guidance in navigating and using Microsoft Word, Microsoft Excel, and Canvas by Instructure