Samuel Hodges

Computer Science Researcher | Software Engineer | Friend of Robots

Github · Hodgespodge

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EDUCATION

NC State University — *M.S. Computer Science* August 2020 - December 2022
- GPA 3.79
- Member of the Robot Code Lab under John-Paul Ore, PhD

UNC Asheville— *B.S. Computer Science, Math minor* August 2016 - May 2020
- GPA 3.83
- Dean's List (Fall 2016- Fall 2019)
- Chancellor's List (Spring 2019)

WORK EXPERIENCE

NCSU Computer Science — *Research Assistant* September 2020 - October 2022
- Created a structural Test Coverage Tool for ROS2 robot Behavior Trees in C++ and Python.
- Conducted case study on Navigation2 package test suite coverage.
- Authored *Canopy: Coverage Measurement for Behavior Trees.* In review by **ICRA 2023.**
- Created multiple Docker images for developing ROS and ROS2 based Robots.
- Created Docker image for developing ROS2 robots in Unity.

NCSU Computer Science — *Teaching Assistant* August 2020 - December 2022
- Mentored students and assessed student code.
- Software Engineering - CSC 326 (Fall 2022)
- Software Engineering for Robotics - CSC 495 (Fall 2021)
- Discrete Mathematics - CSC 226 (Fall 2020, Spring 2021)

UNCA Computer Science — *Research Assistant* May 2019 - July 2020
- Developed SBML compliant Python code with the GillesPy2 team.
- Co-Authored *GillesPy2: a Biochemical Modeling Framework for Simulation Driven Biological Discovery.* Currently in review by **Letters in Biomathematics**
- Designed and developed functions for graphical and statistical analysis of stochastic simulations.
- Gained experience in test-driven development and Git version control.

Appalachian Tropicals— *Greenhouse Manager* September 2016 - August 2020

Manna Food Bank — *Warehouse Volunteer* January 2018 - May 2019

EXAMPLE PROJECTS

A* Pathfinding and Boids — *C++ , Python, SFML*
- Wrote multithreaded C++ code for simulating and animating multi-agent movement behaviors using SFML.
- Created Python scripts for creating large geometric graphs and procedural multi-room indoor test environments.
- Implemented A* search algorithm with path-following for indoor navigation.

Wifi-Enabled Humidistat Controller — C++, *Arduino, ESP32*
- Developed Arduino code for monitoring and controlling temperature and humidity using an esp32.
- Implemented RESTful web server for monitoring and controlling in-browser.

Genetic Algorithm for Chess Heuristic Optimization — *Python*
- Implemented a chess game runner with options for custom board configurations.
- Developed Alpha-Beta Pruning Search based player agents.
- Collaborated on a genetic algorithm for player agent heuristic function optimization.

Favored Languages

Python

C++

Technologies

Linux

Docker

ROS 2

Keras

Other Languages

LaTeX

Java

MATLAB

R

C

Relevant Courses

DevOps

Software Engineering

Software For Robotics Today

Machine Learning with Graphs

Embedded/Real-Time Systems for Autonomous Driving with Machine Learning

Artificial Intelligence 1

Computational Applied Logic

Data Structures and Algorithms

Calculus 3

Calculus-Based Statistics

Linear Algebra