Angel Sylvester

Curriculum Vitae

Contact:
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EDUCATION

University of Minnesota, Minneapolis — *PhD*

SEPT 2020 - PRESENT

Ph.D candidate in Artificial Intelligence/Robotics

Macalester College, St. Paul — *B.A*

SEPT 2016 - MAY 2020

Chemistry and Computer Science (with honors) double major

EXPERIENCE

University of Minnesota, Minneapolis — *Graduate Researcher*

SEPT 2020 - PRESENT

- Explored biological/chemical-inspired implementations of swarm-based foraging scenarios from a theoretical and simulation-based perspective
- Integrated Ordinary Differential Equation (ODE) and explored bio-inspired mechanisms at the environmental level to model long-term steady state behavior of large-scale robot foraging behavior
- Employed elements of evolutionary learning (genetic algorithms) in a multi-robot based simulation to develop a framework committed to advancing the adaptation and learning necessary for foraging in a variety of different environments

SEISMIC, Minneapolis — *Data Analyst Fellow*

MAY 2021 - PRESENT

Collaborated with other SEISMIC institutions to implement a hierarchical linear model in R to determine the relationship between demographic factors (ie. first generation status, URM, gender) and performance

University of Minnesota, Minneapolis — *CSCI 1133 Instructor*

JAN 2022 - MAY 2022

- Instructor for CSCI 1133 (Introduction to Computing and Programming Concepts) for a class for ~40 students covering fundamentals of Python programming, developing coursework, lecture plans, and oversaw weekly labs alongside TA's

PROGRAMMING LANGUAGES

Machine Learning: tensorflow, keras, scikit-learn

Programming Languages: Python, Java, C, Typescript, HTML, CSS, R

Frameworks: ROS, Babylon.js, Ionic, Netlogo, ArGoS, Webots

Databases: Firebase, SQL

OS: Linux, Windows, Mac

AWARDS

ADC Fellowship

Datafest "Best in Show"

LANGUAGES

English (fluent)

Spanish (intermediate)

Korean (basic)

Macalester College, St. Paul — *Summer Researcher*

MAY 2019 - AUG 2019

Implemented two convolutional neural networks (with ultimate validation accuracy of 95% and 97% respectively) and optimized Monte Carlo localization-based code base to facilitate indoor robot localization and navigation

HONORS PROJECT: Digital Commons Macalester College, 2020. URL: https://digitalcommons.macalester.edu/mathcs_honors/49/

PROJECTS

Prototyping a Robotics Kit for Middle School Students — *ongoing*

Created a prototype robot equipped with a raspberry pi-based framework and basic motion and sensing functionalities that are compatible with ROS. Ultimate intent is to make user-friendly manual with guided activity to introduce middle school students to hands-on programming

Designing a Multi-User Interface in Virtual Reality — *ongoing*

Using Babylon.js and Matrix, a multi-user interface was configured that would encourage multiple users to interact across different Oculus headsets.

Github: https://github.com/mill7079/final_CSCI5619

MacStudyAway—

Coordinated with Macalester Center for Study Away to create a UX-friendly, tinder-inspired interface for study abroad program recommendations with a forum/timeline feature

Github: https://github.com/dnguyen2021/MacAbroad

ADDITIONAL EXPERIENCE

University of Minnesota —

Graduate Teaching Assistant for CSCI 1133 (Python, 1 year), 1103 (Java, 1 semester), 1933 (Java, 1 year) and CSCI 2980

Summer Computing Camp Instructor (Python, Jun 2022)

Macalester —

Preceptor for COMP123 (Python, 1.5 years)

PUBLICATIONS/WORKSHOP PAPERS

1. J. Harwell, A. Sylvester, M. Gini. "Characterizing the Limits of Linear Modeling of Non-linear Swarm Behaviors". In: Autonomous Robots (2022). Under Review. URL: https://arxiv.org/abs/2110.12307
2. J. Harwell, A. Sylvester, M. Gini. "A Robust Model for Predicting Collective Behavior in Large Robot Swarms". In: Robotics swarms in the real world, Workshop at ICRA, 2021

PRESENTATIONS/POSTER SESSIONS

2023 A Dynamic Biology Driven Evolutionary Solution to Emergent Precursors to Optimal Behavior, *CRA-WP Workshop*

2023 Enforcing Real-time Collaboration and Learning in Search Environments for Multi-Robot Systems, *MSI RC Exhibition*

2022 Exploring the Role of Classroom Composition on Student Performance, *SEISMIC Minnesota Week Exhibition*