Christopher T. Morse

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Education

University of Virginia — Charlottesville, VA
M.S. in Computer Science — Expected May 2023
GPA: 4.00 / 4.00

University of Minnesota – Twin Cities — Minneapolis, MN
B.A. in Computer Science, Minor in Music — May 2021
GPA: 3.91 / 4.00

Work Experience

Teaching Assistant, University of Virginia
CS 1010: Introduction to Information Technology — Spring 2023
CS 4501: Robotics for Software Engineers — Fall 2022
- Developed and led engaging laboratory sections for 50+ students.
- Hosted office hours to further enhance students' understanding of the course material.

Research Assistant, University of Virginia — Summer 2021 - Winter 2022
Leading Engineering for Safe Software (LESS) Laboratory
- Created a novel method for inferring spatial properties from robot system data.
- Developed a pipeline to determine scene coverage for AV perception systems.

Research Assistant, University of Minnesota — Winter 2019 - Fall 2020
Interactive Robotics and Vision (IRV) Laboratory
- Developed a streamlined method for paired diver image generation to combat data scarcity.
- Investigated a method for synthetic image generation for data augmentation.

Teaching Assistant, University of Minnesota
CSCI 2011 : Discrete Structures of Computer Science — Fall 2019
CSCI 1133 : Intro. to Computing and Programming Concepts — Fall 2018, Spring 2019
- Conducted laboratory sections to encourage student collaboration and participation.
- Hosted office hours and discussion sections; assisted with grading and proctoring.

REU Research Assistant, University of Nebraska – NIMBUS Lab — Summer 2019
- Analyzed effects of hyperparameter tuning and data augmentation on UAV detection.
- Created and presented a research poster for the UNL Summer Research Symposium.

Projects

VAE-Guided Testing Framework for OpenPilot — Spring 2022
- Developed and trained a VAE for manifold approximation of traffic images.
- Extracted and clustered rare images with K-Means and PCA.
- Exploited underrepresented features in training data, revealing a 14% reduction in lane confidence.

Spatial Relation Inference Generator — Fall 2021
- Developed a tool to automatically infer robot system specifications from rich traces of data.
- Uncovered novel specifications for surgical robots and autonomous vehicles.

Skills

Python – SQL – Machine Learning – Manifold Statistics – Computer Vision – Robotics

Service, Honors, and Awards

- Paper Reviewer, IEEE International Conference on Robotics and Automation — Fall 2022
- UROP Research Award Recipient — Summer 2020
- *2nd Place*; University of Nebraska REU Research Competition — Summer 2019

Publications

C. Morse, L. Feng, M. Dwyer, S. Elbaum, "A Framework for the Unsupervised Inference of Relations Between Sensed Object Spatial Distributions and Robot Behaviors." Accepted to the *2023 IEEE International Conference on Robotics and Automation (ICRA).*

M. J. Islam, C. Edge, Y. Xiao, P. Luo, M. Mehtaz, **C. Morse**, S. S. Enan, and J. Sattar, "Semantic Segmentation of Underwater Imagery: Dataset and Benchmark." *2020 IEEE International Conference on Intelligent Robots and Systems (IROS).*