Christopher T. Morse

Email: drb6yv@virginia.edu — **Phone:** (402) 326-7906 — **Website:** christheissmorse.github.io

Professional Summary

Curious and motivated early career professional with specialized knowledge in the intersection of software engineering, machine learning, and robotics. Skilled researcher and presenter with a history of publications and awards. Extends perspective through cross-disciplinary collaboration. Resourceful problem solver with an M.S. in Computer Science initiating career in robot software engineering.

Education

University of Virginia — Charlottesville, VA
M.S. in Computer Science — 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 — Aug. 2022 - May 2023
CS 4501: Robotics for Software Engineers
CS 1010: Introduction to Information Technology
- Developed teaching materials for robot control, localization, sensing, and ROS system design.
- Designed and led engaging laboratory sections for 50+ students.

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

Research Assistant, University of Minnesota — Jan. 2020 - Jan. 2021
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 to aid with data augmentation.

Teaching Assistant, University of Minnesota — Sept. 2018 - Dec. 2019
CSCI 2011 : Discrete Structures of Computer Science
CSCI 1133 : Intro. to Computing and Programming Concepts
- Conducted laboratory sections to encourage student collaboration and participation.

REU Research Assistant, University of Nebraska — June 2019 - Aug. 2019
Nebraska Intelligent MoBile Unmanned Systems (NIMBUS) Laboratory
- Analyzed effects of hyperparameter tuning and data augmentation on UAV detection.
- Integration and testing with NVIDIA Jetson Nano.

Projects

Network Packet Analysis with NLP — Spring 2023
- Created a novel command line tool to parse and query network data with NLP.
- Utilized the GPT-3 API to generate SQL queries over MySQL data tables.

VAE-Guided Testing Framework for OpenPilot — Spring 2022
- Designed and trained a VAE for manifold approximation of traffic images.
- Clustered training set images with K-Means and PCA to exploit underrepresented features.

Skills

Python/C++/C/SQL – Machine Learning – Robot Perception (Cameras, LiDAR) – Docker – Git

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." *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).*