ALEX VESEL

CS \ AI

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EXPERIENCE

Tesla

Software Engineer

May 2024 – Present Palo Alto, CA

- Computer vision and deep learning on Sensing team.

Tesla

Algorithm Engineering Intern

June 2023 – September 2023 Palo Alto, CA

- Developed inertial sensing algorithms for Tesla vehicles and Tesla Bot (Optimus), including mathematical derivation and implementation
- Computer vision using deep learning models for new vehicle feature
- IMU/GNSS sensor fusion through statistical models

Research Assistant

AI for Remote Sensing

September 2023 – Present Stanford University

- Research project to create 3D exterior and interior models of buildings at scale
- Leverage computer vision techniques and optimization to extract information from floorplans and align to building exteriors modeled using satellite imagery and aerial lidar
- Experience training models on high performance computer clusters

PROJECTS

Autonomous Decision Making for Air Taxi Networks

CS239 Advanced Topics in Sequential Decision Making

Early 2024 Stanford University

- Formulated the air taxi network problem (ATNP), which models the multi-agent Markov decision process optimization problem of future air taxi services like Joby
- Provided a solution to the ATNP that decomposes the problem into three sub-problems: agent-passenger assignment, flight level selection, and flight trajectory planning
- Created a simulator of the ATNP grounded in potential vertiport layouts across the Bay Area and New York City.
- Implemented solution using Monte Carlo tree search and custom optimization heuristics and ran experiments comparing to common rideshare matching algorithms
- Paper available on arXiv

Reinforcement Learning in Minecraft

Personal Experiments

Mid 2024 - Present

- Currently exploring on-policy RL methods in Minecraft. Goal is to create a Minecraft world model to enable model-based planning in the latent space

EDUCATION

M.S. Computer Science

Stanford University

September 2022 - April 2024

GPA: 4.102 / 4.000

B.S. Electrical Engineering and Computer Sciences

University of Wisconsin - Madison

May 2022

GPA: 3.987 / 4.000

SKILLS

Python | C | C++ | MATLAB

Linux | MacOS | Windows

NumPy | TensorFlow | Keras | PyTorch | Pandas | Google Colab | Visual Studio | Cloud Computing

On-policy RL | Simulation | Vector Database | Semantic Search | LLM Agents

COURSEWORK

- Robotic Manipulation
- Computer Vision
- Artificial Intelligence
- ML under Distribution Shifts
- Operating Systems
- Compilers
- Digital Signal Processing
- Statistics

INTERESTS

- Guitar
- Songwriting
- Weightlifting
- Philosophy
- Psychology
- Cinema