Sander Schulhoff

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Education

University of Maryland, College Park Fall 2020 - Spring 2024
Bachelor of Science in Computer Science *GPA: 3.818*

Research

MineRL Organizing Team Summer 2022 - Present
MineRL Labs
- Helping organize/promote the competition and writing Sphinx documentation

Stabilizing Hostilities through Arbitration and Diplomatic Engagement Spring 2022 - Present
University of Maryland, Professor Jordan Boyd-Graber
- Managed team of undergrad and grad students on a DARPA funded multi-university project with the goal of building bots to play the boardgame Diplomacy and talk to players
- Built CI pipelines, including Dockerized testing, precommit, and Vercel integration for the documentation website
- Ideated and pitched 4 bot presentations: Janus Bot, Janus Bot [Shortened], Janus Bot [MVP], and SOA Bot
- Wrote and presented a report on DAIDE-English translation with GPT-3 to multiple lab professors
- Wrote a DAIDE syntax parser package which also allows keyword composition and string generations

Andreou Lab Internship Summer 2021 - Fall 2021
Johns Hopkins University, Professor Andreas G. Andreou
- Built data pipelines to record data from Arduino chips and RealSense cameras and send it to Microsoft \Psi
- Implemented a CNN+GRU model from scratch with Pytorch for video classification on event camera data

CLIP Undergraduate Research Fall 2020 – Summer 2021
University of Maryland, Professor Jordan Boyd-Graber *College Park, MD*
- Worked on Diplomacy boardgame NLP project developing a Discord bot used to collect player data and display machine learning predictions
- Bot passed live Alpha and Beta tests with paid participants
- Developed a simple full-stack website to collect data for a NLP analogy project
- Built an annotation workflow for the UMD QANTA project

Neurodata Lab Internship Summer 2019
Johns Hopkins University, Professor Joshua Vogelstein *Baltimore, MD*
- Wrote unit tests for a project converting clustering algorithm libraries written in R to Python
- Wrote scripts to create presentational graphs of algorithm performance on data sets like Iris
- Performed investigations on different clustering metrics where ground truth is known based on the Zachary's Karate Club social network graph dataset

Work Experience

Semiotic Labs | *Python, Julia* Summer 2022
- Developed software for performing deep reinforcement learning to price The Graph protocol subgraph queries
- Implemented continuous policy gradient bandits (VPG, PPO) in Julia for adaptive query pricing

Farama Foundation | *Python, Jekyll, Liquid, HTML, CSS* Spring 2022 – Summer 2022
- Led development of new Gym website: managed PRs and wrote scripts to generate pages, menus, and gifs
- Made a number of small fixes to Gymnasium
- Built and refactored fantasia Jekyll theme from PettingZoo website
- Wrote and published gym-notices PyPI package
- Assisted in development of PettingZoo website

Teacher at Friends School of Baltimore | *HTML, CSS* Fall 2021 – Spring 2022
- Co-taught an introductory web development/design course to highschoolers

Axidraw Control Software | *HTML, CSS, Javascript, Python* Spring 2020
- Hired to build a Mac application for automating the process of writing physical notes
- Wrote frontend (Bootstrap) and backend (Python+pyaxidraw) to allow users to send tasks to be written by an Axidraw

Selected Projects

Promptgineering | *Javascript, markdown* 2022

- Writing an open source guide on prompt engineering (PE), with chapters including basic PE, and applications
- Read 50 research papers in a couple weeks
- Performed market research on different prompt engineering IDEs

Websites | *HTML, CSS, Javascript, Bootstrap, Jekyll, MaterializeCSS* 2021

- Built my personal website and Denis Peskov's website from scratch with Jekyll and Bootstrap
- Built Teacher Recommender System Website from scratch with MaterializeCSS
- Working on candidate Augustin Saah's website (adapted from a Jekyll format) and PsiWars site (Jekyll+Bootstrap) from scratch

Teacher Recommender System | *Google Apps Scripts, HTML, MaterializeCSS* Spring 2019 – Present

- Developed suite of scripts to automate the process of matching students with teachers who will write their college recommendation letters
- College counselors control the process from a menu with functions allowing them to create forms, send them, and run a simple scoring algorithm that generates assignments
- Students and teachers are served autogenerated Google Forms to collect their data
- Sold Alpha version and released Beta version as an official Google Sheet Add-On

Heart Heist App | *Swift, Objective-C* Summer 2018

- Built a top down shooter app using XCode and deployed it on the Apple App Store
- Used Gravit Designer and Garage Band to make art and music

Open Source Contributions

MineRL (Minecraft Reinforcement Learning Library): Committed 1000+ lines of documentation, bug fixes, and feature additions, including a tutorial on custom environment building. Also ported (from Project Malmo) the ability to send chat messages in MineRL and wrote a tutorial page for it. This functionality allows significant speed ups for training agents.

AI Gym (Reinforcement Learning Library): Built new website, helped organize various documentation additions, make some small codebase changes.

Technical Skills

Frequent Languages: Python, Google Apps Script, Javascript, Java, HTML, CSS, C, Markdown
Frequent Developer Tools: Visual Studio Code, Git, Docker, Adobe XD, Photoshop, Google Drive Scripting Environment,
Natural Languages: English, Spanish

Infrequent Languages and Tools: PHP, MySQL, Bash, Objective-C, C++, C#, Eclipse, IntelliJ IDEA, Pycharm, MAMP, SQLPro, PHPMyAdmin, Platform IO, Visual Studio, Atom, Jupyter Notebook, Google Colab, XCode, Unity

Achievements

Won UMD Hackathon 2022 (Best "Bitcamp" Hack) with Marshie's Adventure, a Bitcamp themed platformer
Won UMBC Hackathon 2020 (Cipher-Tech-Solutions challenge) with ForeTrackR, a novel application of Blockchain to Chain of Custody in digital forensics
Won True Bit design competition (UMBC Hackathon)
Paper on semantic segmentation accepted into Smoky Mountain Data Challenge (paper)