

# Sander Schulhoff

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## EDUCATION

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**University of Maryland, College Park**

*Bachelor of Science in Computer Science*

Fall 2020 - Spring 2024

*GPA: 3.818*

## RESEARCH

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### HackAPrompt Lead Organizer

Spring 2023 - Summer 2023

*Learn Prompting / University of Maryland*

- Organized the first global scale [Prompt Hacking competition](#), collected 600K+ adversarial prompts and published the first ontology of Prompt Hacking
- Personally raised 40K in sponsorship from OpenAI, Preamble, Scale AI, Stability AI, HuggingFace, and 7 other companies

### MineRL Organizing Team

Summer 2022 - Summer 2023

*MineRL Labs*

- Helped organize/promote the competition and wrote Sphinx documentation
- Helped write relevant publications (See section 7)

### Stabilizing Hostilities through Arbitration and Diplomatic Engagement

Spring 2022 - Spring 2023

*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

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### 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-notice [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

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Learn Prompting | *Javascript, markdown*

2022

- Writing the most comprehensive [open source guide](#) on prompt engineering (PE)
- Reached 1 Million+ users and performed 100+ user interviews
- Cited by [Wikipedia](#), [research papers](#), and 100s of Youtube videos and articles

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
- 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

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**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.

**OpenAI Gym/Gymnasium (Reinforcement Learning Library):** Led the development of [new website](#), organized various documentation additions, and made codebase changes.

## TECHNICAL SKILLS

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**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

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**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

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**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](#))

**Towards Solving Fuzzy Tasks with Human Feedback: A Retrospective of the MineRL BASALT 2022 Competition** ([paper](#))

**Won University of Maryland Writing Competition** (Alternative Media Writing Award) for [Learn Prompting](#)