

# 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

### Botany Researcher

Fall 2023

University of Maryland

- Identified and mapped 100s of wild plants on the UMD campus ([website](#))
- Engaged 100s of campus stakeholders and successfully obtained a [UMD sustainability grant](#)
- Built a biogas reactor from plastic parts

### HackAPrompt Lead Organizer

Spring 2023 - Summer 2023

Learn Prompting

- Organized the first global scale [Prompt Hacking competition](#), collected 600K+ adversarial prompts and published the first ontology of Prompt Hacking
- 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 grad and undergrad students on a DARPA funded multi-university project with the goal of building bots to play the boardgame [Diplomacy](#) and talk to players
- Ideated and pitched 4 bot ideas: [Janus Bot](#), [Janus Bot \[Shortened\]](#), [Janus Bot \[MVP\]](#), and [SOA Bot](#)
- Built CI pipelines, including [Dockerized testing](#), [precommit](#), and Vercel integration for the [documentation website](#)
- Wrote a [report](#) on DAIDE-English translation and built a [DAIDE syntax parser package](#)

### 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
- Investigated 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 [Gymnasium website](#): managed PRs and wrote scripts to generate pages, menus, and gifs
- Made a number of [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 an [Axidraw](#)

## SELECTED PROJECTS

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- Learn Prompting** | *Javascript, markdown* 2023
- 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](#), [OpenAI](#), and 100s of Youtube videos and articles
- Wetland Mitigation Banking Data Analysis** | *Python* 2022
- Co-founded a firm analyzing wetland performance using [OMBIL Regulatory Module](#) and [Regulatory In-lieu fee and Bank Information Tracking System](#) data
  - Recommended investment locations based on country-wide analysis to clients
- 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
- Teacher Recommender System** | *Google Apps Scripts, HTML, MaterializeCSS* Spring 2019 – Present
- Developed suite of scripts and menus to automate the process of matching students with teachers who will write their college recommendation letters
  - Sold Alpha version and released Beta version as an official Google Sheet Add-On
- Heart Heist App** | *Swift, Objective-C* Summer 2018
- Developed code, art, and music for a top down shooter app using XCode and deployed it on the Apple App Store

## 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

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

## PUBLICATIONS

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Ignore This Title: Expose Systemic Vulnerabilities of LLMs through a Global Scale Prompt Hacking Competition (EMNLP)  
The MineRL BASALT Evaluation and Demonstrations Dataset ([NeurIPS](#))  
Towards Solving Fuzzy Tasks with Human Feedback: A Retrospective of the MineRL BASALT 2022 Competition ([arxiv](#))  
GPT Deciphering Fedspeak: Quantifying Dissent Among Hawks and Doves (EMNLP Findings)