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# Avi Semmler

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## TECHNICAL SKILLS

<b>Programming</b>	<b>Python</b> , Java, JavaScript, Git, $\text{\LaTeX}$ , SQL, Jupyter notebook
<b>Libraries</b>	numpy, <b>Biopython</b> , matplotlib, <b>PyTorch</b> , <b>einops</b> , PyGame
<b>Graphics</b>	Blender, Panda3D, interactive 3D development, shader-based rendering

## EDUCATION

**MEng Discrete Mathematics** *University of Warwick* **2021 - July 2025 (expected)**

Main courses: **programming**, data structures (including Java coursework), **algorithms**, stochastic processes, linear algebra, differential equations, mathematical statistics, **mathematical biology**, **mathematics of machine learning**, combinatorics

1<sup>st</sup> year: 86.2% (departmental award for exceptional achievement), 2<sup>nd</sup> year: 83.7% (on track for first-class)

**Cambridge Machine Learning for Alignment Bootcamp** **April 2023**

Developed **ML engineering** skills and implemented the transformer-based GPT-2 model in PyTorch from scratch, and trained a version of ResNet

**A-levels** *Menorah Grammar School* **2015-2021**

A\*A\*A\* in mathematics, further mathematics, and computer science

## RELEVANT EXPERIENCE

**Undergraduate Researcher** *Computer Science Department, Warwick* **Summer 2023**

Implemented reinforcement learning in Python to simulate transport demand, and **visualised results** with matplotlib. This was done with close **cooperation and communication** with a supervisor from the department. Also involves a communication component, and a network-based model of agent influence

**Software Engineering Internship** *Larsen & Toubro Infotech* **Summer 2022**

Used Python to implement parsing of natural language input into JSON, working with the **data science** team

## OTHER EXPERIENCE

**AI Safety Discussion Group Facilitator** *AI Society, Warwick* **Sep 2023-Present**

Working in collaboration with another student to organise a discussion group on the potential risks from AI, and technical interventions to improve safety and governance Organised a talk by a researcher on the intersection of **pandemic risk and AI**

**Web Developer** *Shabbat Walk, charity* **Sep 2019 - Feb 2020**

Developed a multi-user website with PHP backend, Stripe API, and SQL database for fundraising

## PROJECTS (WITH GITHUB LINKS)

<a href="#">Using random features for image classification</a>	<i>Pytorch, Python, deep learning</i>
<a href="#">Agent-based Simulation of Congestion Games</a>	<i>Numpy, Python, reinforcement learning, NetworkX</i>
<a href="#">Deep learning notes</a>	<i>Probability, calculus, linear algebra, writing</i>
<a href="#">Phylogenetic tree generation</a>	<i>Data visualisation, string algorithms, bioinformatics</i>

## INTERESTS

I wrote an [article about natural language processing and machine learning](#) for Poincare Magazine. I have completed multiple **bioinformatics** challenges on [Rosalind](#). I enjoy hiking and learning languages.