ay140@duke.edu
909 729 6282

Shaan (Aasmaan) Yadav

website:
shaan106.github.io

Education

Duke University — Expected May 2026
BSE: *Double major in* ***Electrical and Computer Engineering & Computer Science*** — *Durham, NC, USA*
4.0 GPA | *Dean's List with Distinction* | *Duke Energy and Climate Club*

Eton College — September 2017 – June 2022
4.0 GPA *(all A* grades)* | *Oppidan (Academic) Scholar* | *House Captain* | *President of Scientific Society* — *Windsor, Berkshire, UK*

Relevant Courses & Skills

Courses – ECE 350 Digital Systems [A+], ECE 250 Comp. Arch. [A+], ECE 280 Signals & Systems [A], ECE 552 Advanced Comp. Arch. I [Fall '24], Princeton's ELE 475 Comp. Arch. [audit]

Languages – Python, Java, C/C++, Verilog, HTML/CSS, Matlab, Swift, Lua, Assembly

Technologies – Gem5, CUDA in C, Linux, FPGAs, Arduino, PyTorch, Git, HPCs, React

Experience

Yale Computer Systems Lab — May 2024 – Present
Computer Architecture Research Intern — *New Haven, CT, USA*

- Research under Prof. Bhattacharjee on Brain Computer Interface chip design (the HALO chip)

Duke Electrical & Computer Engineering — December 2023 – Present
Teaching Assistant — *Duke University, NC, USA*

- Fall '24: TA for CS/ECE 350 (Digital Systems, Chip Design) under Prof. Bletsch, Prof. Board
- Spring '24: TA for CS/ECE 250 (Computer Architecture) under Prof. Sorin and ECE 110 (Fundamentals of Elec. Engineering) under Prof. Daily
- Hold 6 hours of office hours for ∼300 students every week, help create and grade quizzes & exams, assist with lectures

Duke Singh Research Lab — September 2023 – January 2024
Student Researcher — *Duke University, NC, USA*

- Research under Prof Rohit Singh at the Singhlab at Duke (https://singhlab.net)
- Developed easy-to-use pipeline for protein-drug interaction prediction models; developed algorithms to generate gene sequences from .mol2 data (LIT-PCBA); trained the Conplex model using contrastive training for better 1-shot prediction

Raiz Vertical Farms — June 2023 – August 2023
Engineering Intern — *Lisbon, Portugal*

- Built computational models using self-collected data to show optimal combination of liquid flow rate, temperature and luminosity for maximising yield. Led to an annual yield increase of about 0.2 kg per square meter
- Transferred front-end app from obsolete technologies to Mantine v7; Connected environments to postgres SQL database; Refactored old React code into new environments

Relevant Projects

more projects: *shaan106.github.io*

FPGA Boids — https://shaan106.github.io/projects.html#boids_fpga

- A highly efficient FPGA hardware level implementation of the boids algorithm. Custom Verilog hardware units, custom 5-stage pipelined CPU, custom compiler and display management system.

5-stage pipelined bypassed CPU — https://shaan106.github.io/projects.html#verilog_mips_cpu

- MIPS inspired ISA processor built from scratch using structural verilog. 32-bit 100MHz processor, Pipelined and Bypassed,Hazard handling, Wallace Tree multiplier, Restoring Division Divider, CLA adder

Other Experiences

Palantir *(Data Science Intern, '22)*, **Jaipur Foot** *(Field Volunteer, '21)*, **TeensInAI** *(ML Theory Teacher, '20-'21)*, **BBC** *(Intern, '19)*, Rock Climbing *(since '22)*, Fencing *(since '18)*

32-bit five-stage pipelined CPU January 2024 – Present
Hardware Engineer *Duke University, NC, USA*

- Fully designed, simulated and implemented (using Verilog and FPGAs) a five-stage fully pipelined 32 bit CPU
- Processor includes fully functioning ALU, multiplier (Wallace Tree), Division, interrupts, bypassing and hazards
- Currently in process of writing assembly code that can be executed by processor for a project built around CPU

Council for Entrepreneurial Development October 2023 – Present
Intern *Durham Research Triangle, NC, USA*

- Accelerating **development of early-stage startups** as part of the CED Startup Talent and Training program
- Helped manage a startup pitching event for 200 people; Analysed startup data (salesforce) to better inform resource allocation; Creating a large-language model built upon GPT-4 to provide CED-specific information to clients 24/7

Solar Panel Efficiency Optimization Through Image Capture August 2022 – December 2022
Hardware Engineer *Duke University, NC, USA*

- Worked for for Dr. Mike Bergin (Duke University Professor) under Professor Rebecca Simmons' mentorship to deliver a **low-cost, simple Arduino device to sense dust on solar panels**
- Captured images of dust levels for analysis to **optimize solar panel cleaning schedules and maximize solar efficiency**
- Contributed to and delegated tasks regarding technical memos, presentations, and an academic poster as a team

Palantir June 2022 – July 2022
Data Analyst Intern *London, UK*

- **Analysed and extrapolated raw, incomplete UK wildfire data** (using Palantir's Foundry platform) to **provide data-backed insights for the UK fire department** to most effectively distribute resources to combat unexpected wildfires

Hackathons for Sustainable Development 2018 – 2022
Developer *London, UK*

- Involved in multiple hackathons developing several apps following the **UN Goals for sustainable development**
- Developed MelanomaScan, **an iOS app to diagnose skin cancer** using iphone cameras, and provide location and person specific cancer risk, **project demo:** https://shaan106.github.io/projects/project_melanoma_scan.html
- Developed NewsPal, a google chrome extension to help highlight disinformation online, **won the Hoberman Prize**, hired by Laura Ellis to **develop disinformation detection algorithms with the BBC Blue Room**
- Invited to **mentor teams for NASA Space Apps challenge** in London, helped develop technical MVPs and taught pitching skills

TeensInAI March 2020 – January 2022
Course Developer and Teacher *London, UK*

- Hired by TeensInAI to **develop and teach a course as an introduction to machine learning for teens**
- **Taught course to ∼200 students**; 60 students at a TeensInAI hackathon, 30 at Eton, and 100 more through recorded content
- Link to content: https://youtube.com/playlist?list=PLhH6nWDpggsH5EI8oKAXosorKVcH59tbE