Dav Vrat Chadha

davvrat.chadha@mail.utoronto.ca linkedin.com/in/davvratchadha github.com/davvratchadha davvratchadha.com

Education

UNIVERSITY OF TORONTO

Bachelor of Applied Science in Engineering Science

Sep 2020 – Apr 2025

Toronto, ON, Canada

- Machine Intelligence Major
- PEY Co-op Student

Relevant Coursework

UNDERGRADUATE

Introduction to Machine Learning
Natural Language Computating
Artificial Intelligence
Data Structures & Algorithms
Digital & Computer Systems

Skills & Tools

PROGRAMMING

Python • Sklearn • Keras • Objax • spaCy • Tensorflow • Jax • PyTorch • OpenCV • NumPy • CircuitPython • Linux • C/C++ • Java • HTML • CSS • JavaScript • MySQL • MATLAB • Git • Verilog • ARM Assembly

Awards & Honours

DEAN'S HONOUR LIST

University of Toronto

SKULEPEDIA HACKATHON – 2ND PLACE

University of Toronto

Researched and wrote an article about Skule history with a team interested in protecting and preserving the history and old traditions of UofT engineering.

Extra-Curricular

COMPUTER TECHNICIAN

May 2022 – July 2022

- Helped senior citizens in my neighborhood troubleshoot and fix software and hardware issues in their computers.
- Made the process of getting computers fixed easier for them by removing the technological barrier between them and the customer service executive.
- Helped senior citizens learn about new useful features in their computers related to accessibility needs.

PYTHON TUTOR

Jan 2021 - Apr 2022

- Tutored a first-year Civil engineering student about the basics of Python.
- Concepts taught ranged from simple list manipulations to using NumPy and Pandas library, based on course requirements.

Work Experience

GPU VALIDATION ENGINEER - AMD DCGPU

May 2023 - Present — Markham, ON, Canada

- Developed an automation system in **Python** and **C** to streamline memory tests for **MI300** semiconductor chips, enabling easier and standardized execution, implemented at manufacturing level.
- Created tools in **Python** to efficiently debug and resolve parity issues in memory, ensuring optimal performance and reliability of the memory system.
- Contributed to the advancement of technology by working on **HBM3** in MI300 for El Capitan supercomputer project, which aims to break the **2 exaflops barrier**.

Projects

SUPERRESOLUTION ENGINEER - FINCH SATELLITE MISSION

Sept 2023 - Present — UTAT - Toronto, ON, Canada

- Led the development and implementation of **superresolution** algorithms using Super-Resolution Convolutional Neural Network (**SRCNN**) for the Field Imaging Nanosatellite for Crop residue Hyperspectral mapping (FINCH) mission, enhancing the spatial resolution of collected imagery.
- Collaborated closely with multidisciplinary teams to integrate superresolution capabilities into the novel payload design of FINCH, ensuring seamless interaction between the imaging subsystem and other mission-critical components.

TROJAN DETECTION LLM ENGINEERING - UTMIST

Sept 2023 - Present — Toronto, ON, Canada

- Actively participating in the 2023 Trojan Detection LLM competition, focusing on developing a trojan detection system for **LLMs** and refining trigger generation techniques.
- Currently engaged in reverse-engineering triggers from target strings, aiming to achieve high recall rates and REASR for the competition.
- Utilizing **Auto Prompt Engineering (APE)** methods to train a model capable of generating trigger words that prompt specific target word outputs in the **Pythia 6.9B** parameter model.

NO PUN INTENDED - Try API

Jan 2023 - Apr 2023

- Worked in a team to create one of the largest datasets of puns and their explanations, each sentence tagged using a new tagging scheme.
- Utilized an ensemble of **transformer**-based models **DeBERTa** and **RoBERTa** to detect and locate puns with contextual masking using K-means.
- Built upon the recent research done by Amazon to improve the existing methods and achieved 75.58% test accuracy, which is competitive to GPT-4 performance (82.77%).

Miscellaneous

VOLUNTEER - AMD DCGPU

June 2023 - Present

- **Mentor** in the AMD DCGPU organization, providing crucial assistance in educating new hires and internal transfers on the tools and automation systems utilized for GPU validation.
- Contribute to creating a collaborative learning environment, improving onboarding experiences, and sharing knowledge about HBM3 within the organization.