Gaurav Poona

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Summary of Skills

- Coordinated tasks and fostered collaboration in team projects and lab volunteer work, ensuring efficient workflow and positive team dynamics
- Addressed challenges in coursework and independent projects by conducting thorough analyses and implementing effective solutions
- Applied technical experience working with the latest machine learning frameworks and libraries
- Technical skills: Python, Java, C, Tensorflow, Pytorch, NumPy, Pandas, Matplotlib, OpenCV

Education

HBSc. in Computer Science and Mathematics *University of Toronto* *September 2020 - April 2024*
Relevant coursework: Neural networks and deep learning, Introduction to machine learning, Introduction to AI, Computer vision, Algorithm design and analysis, Vector calculus, Linear algebra II, calculus III

Projects

Neural Net

Technologies Used: Python, NumPy, Pandas, Matplotlib

- Researched and developed a Python-based neural network framework from the ground up in order to improve understanding of deep neural networks
- Implemented stochastic and mini-batch descent, resulting in a 50% increase in test accuracy when compared to vanilla gradient descent on the MNIST dataset
- Implemented and utilized optimizers such as momentum, RMSProp, and Adam optimizer, resulting in a test accuracy increase of over 60% on the MNIST dataset
- Trained and tested neural networks on various multi-class and binary classification problems, with an average test accuracy exceeding 90% across all problems

SmarTrack (Deerhacks Hackathon)

Technologies Used: Python, OpenCV, YOLO, Flask

- Collaborated in a team of four on a computer vision project to detect, track, and record packages moving through a dynamic warehouse setting
- Swiftly learned and leveraged new technologies like YoloV8 object detection model and DeepSort tracking algorithm to improve object detection and tracking
- Created custom dataset consisting of images of package boxes and further fine-tuned model on this custom dataset to increase detection accuracy by over 20%

TA Chatbot Exploration

Technologies Used: Python, PyTorch, Llama 2

- Partnered with peers to develop a TA chatbot for a neural networks and deep learning course
- Researched and reported the potential usage of large language models like Llama 2 in an academic setting
- Fine-tuned Llama 7b-Chat model on custom dataset to improve response quality and compared outputs of our model and to output of Falcon7b, GPT-3.5 Turbo, and GPT-4 models
- Sped up model training and decreased memory requirements using techniques such as Lora and quantization

Volunteer Experience

Intelligent Adaptive Interventions (IAI) Lab at UofT *September 2023 - December 2023*

- Collaborated with graduate students on their research, providing technical support
- Created and trained large language models (LLMs) to study how LLMs explore and generate responses
- Recorded and maintained organized records of meeting, future plans, and progress