Vivek Kethineni

Minneapolis, Minnesota · Personal Website · kethi012@umn.edu

Education

B.S. in Computer Science : University of Minnesota - Twin Cities August 2022 — May 2026

GPA : 3.99 / 4.0

Skills and Technology

Proficient — Python, Rust, HTML

Familiar — Java, SQL, Tensorflow, JavaScript [Vanilla, jQuery, SvelteKit], Git, Linux

Beginner — C, C++ , Cuda

Projects

puffpastry May 2023 – July 2023

- Developed simple machine learning framework focused on explicitness in **Rust** to more concretely understand machine learning by actively coding key algorithms.
- Implemented stochastic gradient descent using **backpropagation**, convolutional neural networks layers, weight initialization algorithms, a **tensor** data structure, and various activation and loss functions all from the ground up. (link)
- Identified and resolved problems like the instability of the softmax and categorical cross-entropy functions caused by floating-point overflow using debugging techniques like **gradient checking**.
- Utilized the framework to create an educational web application in **Rust** using **WebAssembly** to help students and others learning about machine learning understand the impact of different model parameters on the ability of a model to learn the XOR gate. (demo)

pngpeg May 2023 — June 2023

- Developed command line tool to convert PNG images into JPEG/JFIF images to learn about the process. (link)
- Implemented a DEFLATE decompressor, discrete cosine transform, and multiple types of Huffman coding schemes in **Rust** without the help of any libraries.
- Learned to efficiently read format specifications and decide how rigorously they should be followed.

Webscraping April 2023 – June 2023

- Developed tool that identifies the shortest path to Euler from any mathematician listed on the mathgeneaology website using graph traversal algorithsm, and the **Python** library **BeautifulSoup4** (link)
- Created google colab notebook that scrapes the users with the highest number of posts on video game forum, vlr.gg. (link)

BetterVLR April 2022 — July 2023

- Used **JavaScript** to create a greasyfork script that added the ability to block users on vlr.gg, a popular video game forum that did not have the feature built-in to reduce racism and discrimination. (link)
- Received many downloads and eventually morphed into a larger, open-source chrome extension, BetterVLR written in **jQuery**.
- Contributed to BetterVLR and collaborated with the maintainer to fix bugs using git and github.

Relevant Coursework

Taken : Discrete Structures (A), Linear Algebra (A), Multivariable Calculus (A), Introduction to Data Structures and Algorithms (A)

Plan to take before May 2024 : Natural Language Processing, Machine Architecture, Introduction to Artificial Intelligence, Introduction to Operating Systems