Sudhan Pandey

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Education

Fisk University Aug 2022 - May 2026

Bachelor of Science in Computer Science, ***GPA 4.0/4.0*** *Nashville, TN*

- **Relevant Coursework:** Data Structures and Algorithms, Machine Learning, Data Science, Introduction to Computer Science I(Google In Residence) & II, Computer Organization, Social Implications of Computer Technology, Calculus I & II, Discrete Mathematics, Linear Algebra
- **Honors and Awards:** Recipient of Ella Shepherd Moore Provost Scholarship - Fisk University(Full Tuition), Goldman Sachs Market Madness Scholar(2023), Fall & Spring (2022 & 2023) President's List, Fisk Executive Leadership Scholar(2023), CFA Ambassador (2023-2024)

Skills

Languages: Python, Java, Javascript, Typescript, C, HTML/CSS
Frameworks and Libraries: NumPy, Panda, Scikit-learn, PyTorch, TensorFlow, React.js, Node.js, Flask, Express, MySQL,
Developer Tools: AWS S3, Git, Cloudflare, React-Redux, Postman, VS-Code, Vercel, Netlify, Firebase

Experience

Machine Learning Research Intern March 2024 - May 2024, Aug 2024 - Present

Department Of Enerygy, SRNL

- Worked as an ML Intern with **Savannah River National Laboratory** for **blind calibration** of Wireless Sensor Networks using **deep learning**
- Coordinated with team to create a **CNN based drift projection** model
- Implemented **attention mechanism** fundamentals for time series dependency of sensor data
- Working with web development team to create a **frontend** demo to display the results of the calibration
- **Skills learned:** *Pytorch, numpy, pandas, blind calibration, reactjs, nodejs*

STEP Intern May 2024 - August 2024

Google

- Created a analytical dashboard for Google Store frontend engineers to identify and target the **most significan**t asset to work on to **improve Google store** website performance
- Eliminated the need to run audits manually **100+ audits** (saving **10+ SWE minutes** every audit)
- Used **lighthouse API** to run audits on each page of the website and find **opportunities** to work on
- Used the **dashboard** to identify and refactor legacy stylesheet in Google store homepage, **saving 705kb+** of CSS and **improve lighthouse score** from **53 to 59** and implemented a configuration system to scale the change throughout Google Store website
- Consulted with frontend team to build a new UI Data Mocking tool and laid the foundation for the project (This aims to improve **single UI component** Mock time: from **30 minutes** to **4-5 seconds**)
- Learned in detail about the **google frontend infrastructure** and how **google production server** works

STEP Intern September 2023 - December 2023

Google

- Worked with **Cloud UFO** team on turning up **virtual cells**, an abstraction of many physical cells within a **datacenter**, for efficient resource planning, scheduling and executing workloads
- Deployed **4 monitoring dashboards** in GMon language (built on top of python) to monitor the health of components of the virtual cell, saving time in manually checking and debugging for the team.
- Used in **production by the UFO Organization team** to test an ongoing virtual cell turnup in July 2023
- Learned about the concept of **synthetic/black-box monitoring** with probers
- Collaborated and researched with **4 different teams** to learn about their specific components and their health monitoring

Technical Projects

Nano GPT Github September 2024

Python, Pytorch, Numpy

- Implemented a scaled-down version of the **Generative Pre-trained Transformer (GPT) architecture** using PyTorch, focusing on core functionalities such as tokenization, embedding, and transformer blocks.
- Trained the **NanoGPT** model on a corpus of Shakespeare's writings, **fine-tuning** it to generate text in the style of Shakespeare
- Developed the self-attention mechanism from scratch, including **multi-head attention**, and positional encodings, to understand the inner workings of transformers
- Acquired advanced skills in **PyTorch** and a deep understanding of **GPT model architecture**, enhancing capabilities in developing, training, and **fine-tuning** complex AI models from **scratch**.

Mathemagics Website/Github January 2024

Deep learning, Tensorflow, huggingface, numpy, React, Express, NodeJS, Flask, HTML, CSS

- Developed a simple math quiz game based on **CNN based hand written digit classification model**
- Created the frontend with **reactjs and html canvas** to let users **draw** on the screen and provide with scores for a given arithmetic question
- Implemented a **flask api** to receive the image detail and classify the image for a given number

Extra-Curriculars

Fisk Computer Science Club (August 2022 - Present)

Fisk Rocket Science Club (August 2022 - Present)

Equinix-Fisk Hackathon Finalist(August 2022)