

Pranav Kamesh Sivakumar

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EDUCATION

Master of Science in Computational Science – New York University – NY, USA

Sep 2021 – May 2023

Coursework – Natural Language Processing, Computer Vision, Foundations of Finance, Fundamental Algorithms, Introduction to Deep Learning Systems, Numerical Methods 1, Programming Languages, High Performance Computing. **GPA: 3.52**

Bachelor of Technology in Chemical Engineering – IIT Madras, Chennai, India

Jul 2017 – May 2021

Coursework – Computational Techniques, Multivariate Data Analysis, Probability, Statistics and Stochastic Processes, Foundations of Data Science, Pattern Recognition and Machine Learning, Differential Equations, Principles of Economics. **GPA: 8.38**

SKILLS

Programming Languages: Python, C++, R, MATLAB

Software/Frameworks: Tensorflow, Keras, PyTorch, LangChain, OpenCV, SQL, PostgreSQL, Snowflake, MongoDB, Flask, Streamlit, PySpark, PowerBI, Git, Jupyter, OpenMP, MPI, CUDA, Slurm, Singularity, Docker, Bash, AWS, GCP

Data Science: Machine Learning, Deep Learning, Natural Language Processing, Pattern Recognition, Computer Vision, Algorithms and Data Structures

RELEVANT EXPERIENCE

AI/ML Engineer – PartnerTap

Jul 2023 - Present

- Tackling the problem of solving **Record Linkage** for **20 Million records** by using **Splink** with a **PySpark** backend, on a **DuploCloud EMR** server-less cluster.
- Scraped PartnerTap support page using **Selenium**, and used **LangChain** to build a **GPT-3.5 based Chatbot for Customer Support**, with **Streamlit** front-end.

Machine Learning Engineer – Deep Market Making Inc – Part Time

Feb 2023 – May 2023

- Made a Proof of Concept for obtaining **Feature Importance** using **Shapley** values for the task of Corporate Bond price prediction
- Built **Normalization** architecture for Machine Learning models using **TensorFlow** and **Keras** frameworks.

Data Engineering and ML Intern – PartnerTap

May 2022 – Dec 2022

- Created a **Normalization** script using **Flask** and **SpringBoot** to improve the performance and speed of existing Data Normalization methods.
- Solved the problem of **Duplication** in **Account Matching** by writing a code module using **Machine Learning** to handle deduplication for **20 million** records on **AWS EC2** instance within **30 minutes**, using **PostgreSQL** integration within **Python**.
- Built a tool for **Account Matching** using **Machine Learning**, that performs **Record Linkage** between 2 data sources of size **1 million** records each by using **Pandas**.

Automation Intern – AB-InBev

May 2020 – Jun 2020

- Created code modules for Bot Automation using **Automation Anywhere** for collection of Employee Hiring data.
- Generated and verified **50** reports by creating code modules to automate Data Retrieval from **SAP** Database.
- Worked in an **Agile** Workspace environment, and generated Service Level Templates using **Power Query** and **Excel** for **Data Analysis**.
- Created live Data Visualizations using **Power BI** dashboards to track exports for use by the shipment team.

Data Analytics Intern – Cadla PTE Ltd

Apr 2019 – Jun 2019

- Cleaned the raw sales data from **1000** Supermarkets and departmental stores on MongoDB and organized it on **GCP**, which provided a **speed-up** in data processing of **25%**
- Utilized **GCP** tool **BigQuery** for Data Warehousing of Sales data and verified correlations between sales volume and important annual events.
- Made Product and Brand based sales comparisons and visualized the findings using **R** language.

PROJECTS

Satellite Image Segmentation of Land Cover – Computer Vision – Multi Class Classification - NYU

Sep 2022 – Dec 2022

- Trained U-Net models with **ResNet-18** and **ResNet-50** encoders on the **LandCover.ai** dataset for **Satellite Image Segmentation**.
- **Augmented** the given dataset with relevant **transformations** to balance the dataset, which improved the results.
- Compared the performance of Vanilla U-Net model with **U-Nets** with ResNet encoders, for both the original and Augmented datasets.
- Obtained a Classification accuracy of **0.88** for U-Net+ResNet-18 model, which is in line with previous benchmarks.

Unlearning Dataset Bias – Textual Entailment - Natural Language Processing – NYU

Feb 2022 – May 2022

- Utilized concepts from **He et al's work** – (Unlearn Dataset Bias in NLI by Fitting the Residual) to train a BERT model for **textual entailment task**.
- Obtained an accuracy of **0.898** with **BERT** model on the **Stanford NLI** dataset, improving upon the benchmark set in He's work.

Emotion Masked Language Modeling – Natural Language Processing – NYU

Nov 2021 – Dec 2021

- Reproduced the results of **Sosea et al's work** – (eMLM: A New Pre-training Objective for Emotion Related Tasks), which introduced a new pre-training objective, **emotion Masked Language Modeling (eMLM)** to BERT models to improve their performance specifically for **Sentiment Analysis** and **Emotion Detection** tasks.
- Obtained similar results to the paper upon testing on 2 Sentiment Analysis and Emotion detection datasets.

Facial Emotion Detection – Image Processing – IIT Madras

Sep 2020 – May 2021

- Implemented a **2 stream Neural Network** to consider **Micro-Expressions** in **Facial Emotion Detection**.
- Showcased the difference in performance of 2 widely used Emotion Detection Models on Indian and mixed video datasets.
- Implemented procedures for generating spontaneous emotions and created an **Indigenous video emotion dataset**.
- Compared and verified the results with parallel Eye tracking and EEG wave analysis results for Emotion detection.

Data Contest – Pattern Recognition and ML – Classification – IIT Madras

May 2020 – Aug 2020

- Developed a **model** to **predict Stay/Exit of an employee** from a company based on ratings and remarks given.
- Collected useful features after pre-processing data and appropriately **normalized** the features.
- Submitted an **XGBoost** model with **K-fold Cross Validation**, which scored a weighted accuracy of **0.8488** against the baseline of 0.7234.

ADDITIONAL EXPERIENCE

Graduate Teaching Assistant – Algebra and Calculus, Calculus I, Mathematics for Economics III – NYU

Sep 2021 – May 2023

- Communicated Calculus concepts, cleared doubts, held office hours and graded Assignments for **200+** students in total.

AWARDS AND HONORS

Guinness World Record holder – Largest Multi-Sudoku Solved Puzzle. Represented India at the World Sudoku and Puzzle Championships from 2015-2019, 2022. Asian Sudoku Championship Gold Medallist. Times Sudoku Champion 2017.