Shrish Kumar Singhal

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EDUCATION

New York University, Tandon School of Engineering **09/23 – 12/24**
Master of Science, Computer Science (GPA - 3.83/4) *New York, NY*
- Key courses: Big data, Machine Learning, Data Engineering, Artificial Intelligence, Foundations of Data Science

Indian Institute of Technology (IIT) Guwahati **07/19 – 05/23**
Bachelor of Technology, Electronics and Communication with Minor in Computer Science (GPA - 8.11/10) *Guwahati, India*
- Key courses: Linear Algebra, Multivariate Calculus, Probability Theory, Data Structures and Algorithms, Deep Learning

TECHNICAL SKILLS

- **Languages:** Python, C++, MATLAB, R
- **Libraries:** NumPy, Pandas, Matplotlib, scikit-learn, Seaborn, Beautiful Soup, OpenCV, yfinance, NLTK
- **Frameworks:** Keras, TensorFlow, PyTorch
- **Development Tools:** Polars, Spark, VectorDB, MapReduce, Android programming, Firebase, SQL, MongoDB, Tableau, TensorBoard, Streamlit, Excel
- **Systems and Platforms:** Windows, Linux

EXPERIENCE

New York University, Tandon School of Engineering, New York **06/24 – 10/24**
Quantitative Researcher *Publication*
- Developed a **systematic long/short trading strategy** using SARIMA and LSTM models on US indices.
- Incorporated the 10-year Treasury rate for enhanced portfolio rebalancing and macroeconomic insight.
- **Publication**: S K Singhal et al., "An LSTM case study for trading American liquid indices".

Indian Institute of Technology (IIT) Guwahati, India **08/21 – 09/23**
Student Researcher - Computer Vision *Publication*
- Proposed an attention-based deep learning model for abdominal **lymph node metastasis** detection in colorectal cancer.
- Presented a method based on **region growing** for segmenting bone tissues from CT images, achieving a Dice index of 0.93 and an **accuracy of 0.90**.
- **Publication**: S K Singhal et al., "Bone Tissue Detection from CT Images", Lecture Notes in Networks & Systems, 2023.

Unique Identification Authority of India (UIDAI), Bengaluru, India **05/21 – 07/21**
Summer Intern - Data Science *Publication*
- Developed prototype to detect fake users in Aadhaar (India's National Identity Database), with an accuracy of **91%**.
- Employed tf-idf and n-gramming to build **Multinomial Naive Bayes** model for classification of Indian names.
- **Publication**: S K Singhal "Security Analysis of Aadhaar Authentication Process and Way Forward", 3rd ICAC3N.

PROJECTS

Large Language Model Fine-Tuning for Mathematical Reasoning **10/24 – 11/24**
Personal Project *Github*
- Implemented Supervised Fine-Tuning (SFT) of **Llama3-8B** model using LoRA and 4-bit quantization, achieving **82.5% accuracy** on a complex mathematical reasoning task
- Optimized training pipeline using Unsloth library, enabling 30% VRAM reduction and 2x larger batch sizes, while leveraging gradient checkpointing for efficient long-context processing.

Subzero Signals - Analyzing IceCube Neutrinos **02/24 – 05/24**
Big Data Course Project *Github*
- Processed **100 GB** of IceCube neutrino data with real-time and batch processing using **Spark Streaming**.
- Optimized data processing, achieving a **3x** performance improvement with **Polars** over PySpark.
- Enabled advanced queries like KNN, range search, cosine similarity with **VectorDB** for efficient data analysis.
- Predicted event locations using linear regression and later improved accuracy by **1.3 times** with CNNs.

ACHIEVEMENTS

- **Top 10** in 2700-entry **National Aadhaar Hackathon, 2021**. Developed identity verification app using open APIs.
- Ranked **18th out of 6701 teams** in the Online Hackathon Festival (OHF) Season 2, conducted by Unstop in 2020.
- Ranked **1395th** among 1.5M+ candidates appearing for the **Joint Entrance Examination 2019**.
- **KVPY Fellow 2018, Top 0.5%** among 50k+ candidates & **NTSE 2017, Top 0.25%** among 300k+ candidates.