Lakshay Tyagi

lakshay.tyagi.nyu@gmail.com | +1 (551) 344 -7010
GitHub: lakshayt7 | LinkedIn : lakshayt7

EDUCATION

New York University, Courant Institute of Mathematical Sciences Sep 2022 – May 2024
Master of Science Candidate, Computer Science; **GPA: 4.0/4.0**

Indian Institute of Technology, Kanpur (IITK) | Dept. Rank: 1/90 Aug 2017 – May 2022
Bachelor of Technology – Dual Major Electrical Engineering, Minor Computer Science; **GPA: 9.5/10.0**

PUBLICATIONS

Humor@IITK at SemEval-2021 Task 7: Large Language Models for Quantifying Humor and Offensiveness A Gupta*, **L Tyagi***, A Pal*, B Khurana*, A Modi: Publication in **Association of Comp. Linguistics (ACL)** : ACL-ICJNLP 2021

Federated Learning Using Variable Local Training for Brain Tumor Segmentation: A. Tuladhar, **L. Tyagi,** R. Souza, ND. Forkert, BrainLes MICCAI 2021 – Federated Learning and Tumor Segmentation

* -indicates equal contribution

EXPERIENCE

Langone Institute, New York University Mar 2023 – Present
Research Assistant
- Developed **Large Language Model (LLM)** solutions for labeling medical reports with labels along with explanations
- Pretrained and finetuned **BERT** models using MLM on ChatGPT API-generated labels to match **GPT-4** performance
- Engineered and optimized an Active Learning pipeline using a **vector database** with search and update using **FAISS**
- Trained **LLAMA-2** using LORA with distributed GPU training in **PyTorch** to improve Macro F1 score to 0.89

Bayer, AI Team, Whipanny, NJ, USA Jun 2023 – Sep 2023
Data Science Internship
- Developed **time series** pipelines in **Databricks** for predicting sales growth**,** pulling data from **Snowflake** with **SQL**
- Trained **Random Forest**, **XGBoost**, **LSTM (RNN**) models to reduce MAPE to 0.1 on backtests and holdout

Mitacs Globalink, MIPLAB, University of Calgary, Canada May 2021 – Aug 2021
Machine Learning Research Internship
- Set up **distributed training framework** for **UNet**-based federated learning models in brain tumor segmentation
- Achieved Dice Similarity Coefficient of 0.674 using variable local tuning of client parameters implemented in **PyTorch**

Visual Intelligence Group, Samsung Research Institute Bangalore May 2020 – Jul 2020
Software Engineering/Machine Learning Intern
- Implemented Autoencoder-based **deep learning** models in **TensorFlow** for denoising grainy, low-light videos
- Achieved State of the Art SSIM of 0.89 and PSNR of 30.14 in high-quality video generation using perceptual loss

Department of Computer Science, Indian Institute of Technology, Kanpur May 2018 – Jul 2018
Software Development Internship
- Worked with a team of five members on developing a Django WebApp for taking attendance using CCTV footage
- Implemented real-time facial recognition using **Microsoft Azure's Face API** and OpenCV in Python and C++

TECHNICAL SKILLS

- **Programming Languages:** C/C++, Python, Java, Scala, JavaScript • **Databases**: Snowflake, MYSQL, SQLite, MongoDB
- **Cloud Technologies**: Microsoft Azure, Kubernetes, EC2, AWS, Databricks, Hadoop, Spark • **Software:** MATLAB, R
- **Libraries**: PyTorch, Tensorflow, Keras, NumPy, Scikit-Learn, OpenCV, pandas, cvxpy, NLTK. HuggingFace

TECHNICAL PROJECTS

Large Language Models for detecting humour and offense – NLP Sep 2020 - Feb 2021
Course Project, Statistical Natural Language Processing, Department of Computer Science and Engineering, IIT Kanpur
- Tested the performance of Large Language models like BERT, RoBerta, ERNIE and XLNet in rating texts with humor and offense scores using **PyTorch**
- Designed a Multi-Task Learning Framework to utilize auxiliary datasets and experimented with ensembling techniques

Anomaly Detection and Clustering of calls to Distributed Systems – Distributed Systems Jan 2023 – May 2023
Course Project, Big Data and Machine Learning

- Implemented algorithms for tracing and clustering calls to distributed systems of applications deployed using **Kubernetes**
- Engineered and tested an online anomaly detection pipeline using Isolation Forests with **pandas** and **scikit-learn**

Selfie Video Stabilization- Computer Vision, Deep Learning Jan 2021 - May 2021
Prof, KS Venkatesh, IITK

- Substituted the use of YOLO face tracking with filter-based tracking implemented in **C++** with **CUDA** acceleartion
- Used ONNX to reduce inference time of Spatio-Temporal Transformer Networks for efficient video inpainting

ACADEMIC ACHIEVEMENTS

Awarded General Proficiency Medal for having the best academic performance in my undergraduate department at the Indian Institute of Technology, Kanpur

RELEVANT COURSEWORK

Big Data and Machine Learning, Probabilistic Modelling and Inference, Statistical Natural Language Processing, Convex Optimization, Image Processing, Probability and Statistics, Linear Algebra and ODEs, Real Analysis, Complex Analysis, Partial Differential Equation, Algorithms, Programming Languages, Artificial Intelligence, Foundations of Machine Learning

POSITIONS OF RESPONSIBILITY

Graduate Teaching Adjunct, Courant Institute of Mathematical Sciences, NYU Jan 2023 – May 2023

- Conducted classes and covered lecture materials for a Basic Algorithms course for undergraduate students
- Helped design assignment and tests and conducted office hours to help students better understand the lecture material