

Lakshay Tyagi

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EDUCATION

New York University, Courant Institute of Mathematical Science

Masters of Science - Computer Science

Indian Institute of Technology, Kanpur

Bachelor of Technology, Cum. GPA: 9.5/10.0

New York City, New York

Aug 2022 - Jun 2024 (Expected)

Kanpur, Uttar Pradesh

Jul 2017 - May 2022

PUBLICATIONS

- **Humor@IITK at SemEval-2021 Task 7: Large Language Models for Quantifying Humor and Offensiveness : A Gupta*, A Pal*, B Khurana*, L Tyagi*, A Modi** ACL-ICJNLP 2021
- **Federated Learning Using Variable Local Training for Brain Tumor Segmentation : A. Tuladhar, L. Tyagi, R. Souza, ND. Forkert)** BrainLes MICCAI 2021
- **Multi-institutional travelling model for tumor segmentation in MRI datasets : R. Souza, A. Tuladhar, P. Mouches, M. Wilms, L. Tyagi, ND. Forkert** BrainLes MICCAI 2021

* – Indicates Equal Contribution

SKILLS

- **Languages:** C/C++, Python, Java, JavaScript, SQL, Bash, MATLAB • **Frameworks:** AWS, Azure, Hadoop
- **Libraries:** PyTorch, TensorFlow, NumPy, xgboost, Pandas, Django, Scikit-Learn • **Tools:** Docker, Kubernetes

INTERNSHIPS

Federated & Distributed Learning for Tumour Segmentation

[Publication]

Mitacs Globalink - Research Intern

University of Calgary - May 2021 – Aug 2021

- Parallelized and scaled up the training of federated models on the Compute Canada cluster for a speedup of 350%
- Achieved a Dice Similarity Coefficient of 0.674 for a federated model by utilizing novel aggregation functions and variable local training implemented in PyTorch, which is comparable to the performance of a central model trained on pooled data

Video Denoising using Deep Learning

Samsung Research Bangalore - Machine Learning Intern

Bangalore, India - May 2020 – Jul 2020

- Implemented Kernel Prediction Network, an Autoencoder-based architecture in TensorFlow and tested its performance for video denoising
- Achieved State of the Art SSIM of 0.89 and PSNR of 30.14 on Samsung Burst Image Dataset - a dataset consisting of noisy videos by introducing the use of perceptual loss and four-channel Bayer images instead of three-channel RGB

RollCam - Attendance using Facial Recognition

[Poster]

Nutanix summer of code - Software Development Intern

Kanpur, India - May 2018 – Aug 2018

- Worked with a team of five members on developing a Web-App for taking attendance using facial recognition
- Implemented real-time facial recognition using Microsoft Azure's Face API and OpenCV
- Developed a portal with a relational database for registration and viewing attendance using Django and added email support for notifications

PROJECTS

Large Language models for detecting Humor and Offense

[Publication]

Prof. Ashutosh Modi - Natural Language Processing

Kanpur, India - Sep 2020 - Feb 2021

- Tested the performance of models like BERT, RoBERTa, ERNIE and XLNet in rating texts with humor and offense scores
- Designed a Multi-Task Learning Framework to utilize auxiliary datasets and experimented with ensembling techniques
- Final model achieved third rank in humor classification out of 63 teams in SemEval

Selfie Video Stabilization

[PPT]

Prof. KS Venkatesh - Computer Vision

Kanpur, India - Jan 2021 - May 2021

- Designed a Computer Vision algorithm to stabilize a selfie video with respect to the main face in the frame
- Substituted the use of YOLO face tracking with filter based tracking resulting in 450% reduction in run time
- Contrasted video inpainting using Spatio-Temporal Transformer Networks with naïve inpainting methods

Analysis of Bandit Linear Optimization Algorithms

[Report]

Prof. Ketan Rajawat - Convex Optimization

Kanpur, India - Jan 2021 - May 2021

- Implemented four Bandit Optimization algorithms from scratch and contrasted their performance based on regret, running time and robustness to parameter change

COURSEWORK

- **Computer Science:** Data Structure & Algorithm, Programming Languages, Parallel Computing
- **ML:** Machine Learning, Natural Language Processing, Probabilistic Modelling & Inference, Convex Optimization
- **Online Certifications:** Learning Hadoop, AWS Essential Training, Sequence Models

HONORS AND AWARDS

- Awarded the General Proficiency Medal for having the best academic performance in my department at IITK
- Awarded the academic excellence award for being among the top 10% of students at IITK in academic performance

EXTRACURRICULAR

- **Student Guide:** Mentored five first-year students at IITK on their academic and personal issues as a student guide