Utkarsh Tyagi

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EDUCATION

University of Maryland, College Park M.S. in Computer Science, Advised by Prof. Dinesh Manocha - GPA 3.8/4.0

Delhi Technological University (Formerly Delhi College of Engineering)

Bachelor of Technology in Computer Science - GPA 8.7/10, Major GPA 9.05/10

PUBLICATIONS

- CompA: Addressing the Gap in Compositional Reasoning in Audio-Language Models
 ICLR 2024
- AdVerb: Visually Guided Audio Dereverberation ICCV 2023
- MMER: Multimodal Multi-task Learning for Speech Emotion Recognition
 InterSpeech 2023
- ACLM: Selective-Denoising based Data Augmentation for Low-Resource Complex NER
 ACL 2023
- BioAug: Conditional Generation based Data Augmentation for Low-Resource Biomedical NER SIGIR 2023
- CoSyn: Detecting Implicit Hate Speech in Online Conversations Using a Context Synergized Hyperbolic Network
 EMNLP 2023
- DALE: Generative Data Augmentation for Low-Resource Legal NLP EMNLP 2023
- CoDa: Constrained Generation based Data Augmentation for Low-Resource NLP
 NAACL 2024
- Do Vision-Language Models Understand Compound Nouns?
 NAACL 2024
- ABEX: Data Augmentation for Low-Resource NLU via Expanding Abstract Descriptions Under review at ACL 2024
- ASPIRE: Language-Guided Data Augmentation for Improving Robustness Against Spurious Correlations Under review at ACL 2024

RESEARCH EXPERIENCE

GAMMA Lab, University of Maryland

 $Research \ Assistant$

- Currently researching multimodal learning; working on video representation learning for long-form video understanding
- My research focuses on low-resource (labeled data and compute) learning with applications in speech, NLP, or vision. In this area, I solve problems using self-supervised learning, synthetic data augmentation, etc.
- Published at ICLR, ICCV, ACL, EMNLP, InterSpeech, SIGIR
- Advised by Prof. Dinesh Manocha

Multimodal Digital Media Analysis Lab

 $Machine \ Learning \ Researcher$

- Worked under the supervision of Dr. Rajiv Ratn Shah in the areas of Speech and Language Processing.
- Worked on multi-lingual automatic speech scoring systems for low-resource Indian languages.
- Also explored novel architectures to detect implicit hate speech in online conversations. Paper accepted at **AAAI 2023 Defactify**

College Park, Maryland

August 2022 - Present

08/2023 – **05/2025** Maryland, USA

> **2017** – **2021** Delhi, India



IIITD, Delhi

April 2022 - March 2023

INDUSTRY EXPERIENCE

Atlassian India LLP

Software Development Engineer 2

- Worked on the Atlassian's Issue Create Experience to deliver a reliable and performant interface which helped improve key business metrics and customer satisfaction ratings.
- Achieved **99.996%** frontend reliability and scaled the experience for over 250k customers with more than 2M issues created every day. Improved performance TTI from 3.9s to 1.2s using modern technology stack.

Software Engineer Intern

- Identified the limitations for improvements and bottlenecks in the existing legacy API implementation and proposed revamping. Utilized this performant API to develop the user interface.
- Reduced the latency of modal load by 95.57% by avoiding redundant server-side database queries and scaled to 1M customers.

Samsung R&D Institute Bangalore

Machine Learning Intern

- Worked with the **Voice Intelligence** team of Samsung to improve Bixby's wakeup word detection.
- Researched keyword spotting techniques and built an efficient on-device LSTM-CTC based, vocabulary-independent keyword spotter

PATENTS

• Apparatuses, methods, and computer program products for generating an abstractive context summary scheduling interface configured for scheduling and outputting abstractive context summaries for multi-party communication channels (Patent Pending)

U.S. Patent Application No. 17/936,695

• Apparatuses, methods, and computer program products for generating and selectively outputting abstractive context summaries for multi-party communication channels (Patent Pending) U.S. Patent Application No. 17/936,705

TECHNICAL SKILLS

Languages: (Highly Proficient) Python, JavaScript, C++ (Moderate) Java, SQL Frameworks: Pytorch, FastAI, Tensorflow, Scikit-Learn, ReactJS, Jest, Enzyme, NLTK **Certifications and Training:**

- Machine Learning by Stanford University
- Competitive Programming by St Petersburg University

• Game Theory by Stanford University

• Data Analysis with Python by IBM

PROJECTS

Occluded Facial Expression Recognition | Deep Learning, Image Processing

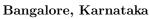
- Developed a framework for recognizing facial expressions in occluded images using non-occluded images as privileged information
- The technique rendered an average gain of 3.90% over the baseline for 3 standard benchmarking datasets

ANN-GWO Intrusion Detection System | Neural Networks, Swarm Algorithms

- Developed a hybrid IDS by using Grey Wolf Algorithm instead of backpropagation with artificial neural networks
- Utilized MIT Darpa 1998 dataset and achieved SOTA results

ACHIEVEMENTS

- EMNLP 2023 Industry Track Reviewer
- JEE Mains 2017: 99.49% percentile, Pan India
- People's choice award 2021 & 2022: Atlassian's internal hackathon
- Winner of Digital Management Inc. India Hackathon, 2019
- 2nd position in Student Hackday 2019 organised by Skillenza
- Barclays India Hackathon 2019 Top 4, All India
- Achieved 5 star rating on Codechef platform for competitive programming



July 2021 - August 2023

Bangalore, Karnataka

May 2020 - July 2020

Jan 2021 - June 2021