Utkarsh Tyagi

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EDUCATION

University of Maryland, College Park **2023 – 2025**
M.S. in Computer Science, Advised by ***Prof. Dinesh Manocha*** *- GPA 4.0/4.0* *Maryland, USA*

Delhi Technological University **2017 – 2021**
Bachelor of Technology in Computer Science - GPA ***8.7****/10, Major GPA* ***9.05****/10* *Delhi, India*

PUBLICATIONS

- 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
- ASPIRE: Language-Guided Augmentation for Robust Image Classification (In Review)
  AAAI 2024
- CompA: Addressing the Gap in Compositional Reasoning in Audio-Language Models (In Review)
  ICLR 2024

RESEARCH EXPERIENCE

GAMMA Lab, University of Maryland **College Park, Maryland**
Research Assistant *August 2022 – Present*

- My primary 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.
- Currently exploring the reasoning capabilities of LLMs using in-context learning
- Advised by Prof. Dinesh Manocha

Multimodal Digital Media Analysis Lab **IIITD, Delhi**
Machine Learning Researcher *April 2022 – March 2023*

- 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**

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

INDUSTRY EXPERIENCE

Atlassian India LLP **Bangalore, Karnataka**

Software Development Engineer 2 *July 2021 – August 2023*

- 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 *Jan 2021 – June 2021*

- 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 **Bangalore, Karnataka**

Machine Learning Intern *May 2020 – July 2020*

- Worked with the **Voice Intelligence** team of Samsung to improve Bixby's wakeup word detection.
- Researched keyword spotting techniques and built a vocabulary-independent, lightweight keyword spotter

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
- Game Theory by Stanford University
- Competitive Programming by St Petersburg 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

- **ICASSP 2024** - Reviewer for "Machine Learning for Signal Processing"
- **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