

# Utkarsh Tyagi

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## EDUCATION

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**University of Maryland, College Park**

**2023 – 2025**

*M.S. in Computer Science, Advised by **Prof. Dinesh Manocha** - GPA 3.8/4.0*

*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

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- [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**
- [CompA: Addressing the Gap in Compositional Reasoning in Audio-Language Models](#) (In Review)  
**ICLR 2024**
- [ABEX: Generative Data Augmentation for Low-Resource NLP via Expanding Abstract Descriptions](#) (In Review)  
**NAACL 2024**
- [ASPIRE: Language-Guided Data Augmentation for Robust Image Classification](#) (In Review)  
**NAACL 2024**
- [CoDa: Constrained Generation based Data Augmentation for Low-Resource NLP](#) (In Review)  
**NAACL 2024**
- [Do Vision-Language Models Understand Compound Nouns?](#) (In Review)  
**NAACL 2024**

## RESEARCH EXPERIENCE

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**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 researching video representation learning for long-form video understanding
- 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

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- 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

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### 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

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**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

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### 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

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- **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