

Aman Khullar

<https://amankhullar.github.io>

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EDUCATION

Georgia Institute of Technology

Ph.D. in Computer Science, HCI Specialization
Advisor: Dr. Neha Kumar

Atlanta, GA
Aug. 2023 – Present

Georgia Institute of Technology

Master's in Computer Science, ML Specialization (GPA: 4.00/4.00)
Coursework: Graduate Algorithms, Machine Learning, NLP, AI Storytelling

Atlanta, GA
Aug. 2021 – May 2023

Netaji Subhas Institute of Technology, University of Delhi

Bachelor of Engineering in Information Technology
First Class with Distinction (CGPA: 8.65/10.00)

New Delhi, India
Aug. 2015 – May 2019

EXPERIENCE

Noora Health

Research Intern

Bangaluru, India
Jan. 2024 – Present

- Working with the research and technology team to design and develop automated health information retrieval tools for remote engagement with family caregivers

Amazon

Applied Scientist Intern, Alexa Hybrid Science

Virtual, GA
Aug. 2022 – Dec. 2022

- Improved the training recipe to incorporate synthetic data to fine-tune speech recognition models
- Quantitatively evaluated role of synthetic speech and loss modification on speech recognition accuracy
- Compiled an initial paper draft of our work reporting speech recognition accuracy improvement of 2%
- Presented the paper, “Robust Speech Recognition via Large-Scale Weak Supervision” in paper discussion

Apple

AI/ML Intern, Siri Text-To-Speech

Seattle, WA
May 2022 – Aug. 2022

- Improved end-to-end speech synthesis with diffusion models using advanced encoder architectures

Georgia Institute of Technology

Graduate Research Assistant, T+ID lab (advisor: Prof. Michael Best)

Atlanta, GA
Jan. 2022 – May 2022

- Developed a contextual entity replacement pipeline to generate synthetic training data in low resource languages — taking cues from hate speech data in English — to facilitate training of hate speech detection classifiers
- Our developed methodology outperformed the classifiers trained on machine translated hate speech data from English to Hindi — the only other alternative — by a factor of 1.4% in accuracy and 2.2% in F1 score

Gram Vaani

Research Associate (advisor: Prof. Aaditeshwar Seth)

Gurugram, India
Mar. 2020 – Jul. 2021

- Developed automatic content moderation tools for in-house moderators, voice based surveys for user data collection, automatic question-answering system for IVR platforms — deployed in a product used by 800,000 rural households
- Conducted quantitative and qualitative evaluation of the effect of introducing AI for automating Interactive Voice Response (IVR) based voice applications — published and presented the results in 3 peer-reviewed publications
- Developed MLOps pipeline for continuous model training — triggered on accuracy of ML model drifting below 95%
- Awarded the Gram Vaani Star Performer award for two consecutive quarters

Product Labs, IIIT Hyderabad

Research Engineer (advisors: Prof. Manish Shrivastava and Mr. Prakash Yalla)

Hyderabad, India
Jul. 2019 – Feb. 2020

- Developed a deep learning based document question-answering model to extract answers from a group of documents; achieved 3 seconds response time and 90% accuracy over 137 page document — evaluated by Indian Army
- Productized the research — model formed core product for Subtl.ai's first instance shipped to 2,500 users

TEACHING EXPERIENCE

- **Teaching Assistant:** CS7650 Natural Language Processing (Spring 2023 under Prof. Alan Ritter)

SELECTED PUBLICATIONS

- **A. Khullar***, D. Nkemelu*, et al. 2023. Hate Speech Detection in Limited Data Contexts using Synthetic Data Generation. *ACM Journal on Computing and Sustainable Societies* [pdf, talk].
- **A. Khullar**, et al. 2021. Costs and Benefits of Conducting Voice-based Surveys Versus Keypress-based Surveys on Interactive Voice Response Systems. *ACM COMPASS* [pdf, talk].
- **A. Khullar**, et al. 2021. Experiences with the Introduction of AI-based Tools for Moderation Automation of Voice-based Participatory Media Forums. *India HCI and KDD Workshop on Data Science for Social Good* [pdf].
- **A. Khullar**, et al. 2021. Early Results from Automating Voice-based Question-Answering Services Among Low-income Populations in India. *ACM COMPASS* [pdf, talk].
- M. Johri, S. Agarwal, **A. Khullar**, D. Chandra, V. S. Pratap and A. Seth. 2021. The first 100 days: How has COVID-19 affected poor and vulnerable groups in India? *Health Promotion International* [pdf, talk, policy brief].
- **A. Khullar*** and U. Arora*. 2020. MAST: Multimodal abstractive summarization with trimodal hierarchical attention. *EMNLP Workshop on NLP Beyond Text* [pdf].

PROJECTS

- **Knowledge Graphs + Language Models:** Combined a knowledge graph with the GPT-J model to reduce inconsistencies in generated text by rejecting contradicting sentences using NLI and enhanced prompting [video]
- **Digital Scribes:** Worked with Stanford Healthcare AI Applied Research team to understand the gaps in current digital scribes technology and how we can improve upon them – consulted the Doctors in resident from an NLP standpoint
- **HUMAN: Hate-speech Understanding by Multimodal Attention Network:** Explained the predictions MultiModal BiTransformer Model (Kiela et al.), improved model accuracy by 1.2% using image autoencoder [link]
- **Autonomous Mars Rover:** Co-founder and team lead of ARES, NSIT's first Mars rover team — ranked among top 71 and 30 teams in University and European Rover Challenges respectively
- **MultiModal BiDirectional Attention Flow model:** Augmented a machine comprehension model (BiDAF) to be used for multimodal summarization as part of my Bachelor's thesis — awarded 3rd highest grade in the batch
- **Interaction of Game Theory and Machine Learning in a connected World:** Presented a survey report highlighting intersection of these fields in electronic market design and selfish routing — awarded highest grade in batch

AWARDS AND HONORS

- **Computing For Good Fellowship:** Among two students selected for C4G fellowship at Georgia Tech for Spring 2023
- **AllenNLP Hacks 2021:** Impact Award runner-up to help identify communities subjected to hate speech
- **Google Research India AI Summer School:** Among 150 candidates selected in India for AI summer school 2020
- **Harvard College Project for Asian and International Relations:** Among 300 delegates selected for HPAIR 2019
- **India's Brightest 33 Engineers:** Among the cohort of 33 students selected by the Economic Times in 2018 [talk]
- **Global Food Ambassador:** Among 278 ambassadors worldwide, selected by Thought For Food organization, in 2017, to work with food entrepreneurs and find innovative solutions to the problem of feeding 9 billion people by 2050

ACADEMIC SERVICE

- **Reviewer:** AfriCHI, 2023
- **Reviewer:** CHI, 2023
- **Reviewer:** IET Computer Vision Journal, 2022
- **Program Committee:** NLP Beyond Text Workshop, The Web Conference, 2021
- **Shadow Program Committee:** ACM COMPASS, 2021
- **Program Committee:** NLP Beyond Text Workshop, EMNLP, 2020

SKILLS

- **Languages and Frameworks:** Python, C/C++, PyTorch, TensorFlow, Git, MySQL, Django

*Equal contribution