Saksham Singh Kushwaha
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Education

- **The University of Texas at Dallas** — May 2027(expected)
  Ph.D. - Computer Science(Audio and Multimodal machine learning) — *GPA: 4.0/4.0*
- **New York University, Courant** — May 2023
  M.S. - Computer Science — *GPA: 3.95/4.0*
- **Indian Institute of Technology, Delhi** — May 2018
  B.Tech - Mathematics and Computing — *GPA: 7.97/10.0*

Experience

- **Nvidia | Deep Learning Intern** — May 2022 - Aug 2022
  Worked in Product Security team to efficiently detect anomalous user-behavior in AWS accounts — *Remote, USA*
  - Developed and implemented a **multi-task autoencoder** that replaced up to 10 production models.
  - Improved existing intrusion detection system by 65% (F-score) and reduced false positives by 50%
- **Zomato | Machine Learning Engineer II** — July 2018 - April 2021
  Part of Search, User personalization, and Logistics teams — *Gurgaon, India*
  - Improved auto-suggestion search by 10% avg. rank, 4% CTR & 2% OTR using **point-wise ML** model
  - Created DQN **RL** based rider dispatch service, improving next order time(3min) & order probability(9%)
  - Developed similar restaurants service by creating restaurants' embedding using modified **Word2Vec**

Publications

- A **multimodal prototypical** approach for **unsupervised** sound classification (paper)
  ***Saksham Singh Kushwaha**, Magdalena Feuentes [INTERSPEECH 2023]*
  - *Developed an unsupervised classification approach leveraging local audio-text embedding relationships.*
  - *Outperformed text-to-audio zero-shot SOTA models (**AudioClip, CLAP, WavClip**) by 12%.*
- ***Sound source distance estimation** in diverse and dynamic acoustic conditions (paper)*
  ***Saksham Singh Kushwaha**, Iran Roman, Magdalena Feuentes, Juan Pablo Bello [WASPAA 2023]*
  - *Proposed a **CRNN** for estimating sound source distance for acoustically diverse annotated datasets.*
  - *Improved the SOTA approach for LOCATA by ∼0.1 meter using inverse-distance loss function.*
- *Analyzing the effect of equal-angle spatial discretization on **sound event localization & detection** (paper)*
  ***Saksham Singh Kushwaha**, Iran R. Roman, Juan Pablo Bello [DCASE Workshop 2022]*
  - *Empirically showed that equal-angle targets results in non-uniform localization error(LE) along elevation*
  - *Mitigated the biasness and improved localization using Fibonacci targets & multi-task angular error loss*
- *Audio-Visual data distillation*
  ***Saksham Singh Kushwaha**, Yapeng Tian [Under preparation]*
  - *Proposed a new data condensation problem and baselines for audio-visual classification.*
  - *Improved unimodal distribution matching data distillation by 6% using cross-modal sample matching.*

Academic Experience

- **Reviewer**: MLSP 2023, AAAI-24, ICASSP-24
- **Research Assistant**: Prof. Magdalena Fuentes (multimodal deep learning) [Aug'22-May'23], Prof. Raveesh Mayya (ML for digital policy change) [Aug'21-July'22]
- **Teaching Assistant**: Intro to python programming (Prof. Junpei Komiyama) [Jan'22-May'22], Discrete Mathematics (Prof. Simeon Ntafos) [May'23-Aug'23], Computer Science I (Prof. Scott Dollinger) [May'23-Aug'23]