

# TANMAY KHADELWAL

📞 +1 (201) 268-9949 ✉ tk3309@nyu.edu 🌐 /tanmayy24 📄 /tanmayy24 🎓 scholar

## Education

New York University, Courant Institute of Mathematical Sciences

Sep 2023 – May 2025

Master of Science in Computer Science

New York, NY

**Relevant Courses:** Fundamental Algorithms, Programming Languages, Computer Vision

Birla Institute of Technology and Science, Pilani Campus

Aug 2017 – Jul 2021

B.E. (Hons) in Electrical and Electronics Engineering

Pilani, India

**Relevant Courses:** Neural Networks and Fuzzy Logic, Information Retrieval, Data Mining

## Technical Skills

**Languages:** C++, Java, Python, TypeScript, JavaScript, Matlab

**Tools:** Kubernetes, Docker, Git, Postman, RabbitMQ, Azure Pipelines

**Frameworks:** SpringBoot, NodeJs, NestJs, Django, Jest, JUnit, MySQL, MongoDB, Redis, PyTorch, TensorFlow, SciKit

## Experience

Fortemedia, Singapore

Sep 2021 - Jul 2023

Software Engineer

Singapore

- Proposed **triplet attention** in inverted residual network with **mean-teacher** model in **PyTorch** for sound event detection (SED); improved PSDS metrics by **34.1%** with only **27.6%** of parameters.
- Established a **multi-task learning** framework in **PyTorch-Lightning** leveraging high-level acoustic characteristics for SED, resulting in a **36.4%** improvement in PSDS metrics over the baseline.
- Programmed **REST APIs** in **Django** to detect events and generate alerts from input audio files using the SED system.

Bajaj Finserv Health Limited

Jul 2020 - Aug 2021

Backend Developer Intern

Pune, India

- Developed highly scalable **microservices** for doctor's practice management system in **SpringBoot** and **NodeJs**, integrated with **MongoDB** and **Redis** for **1000+** **daily** users for E-consults.
- Engineered personalized medication search module with past history and patterns-based quick suggestions using **Elastic Search** and **SQL**, reducing E-consult time with **response time < 50ms**.
- Generated automated data scraping using **Selenium**, integrated third-party services, implemented **CI/CD system** with **Azure DevOps**, conducted **unit testing** and minimized code duplicity.

Healthcare Technology Innovation Centre, IIT Madras

May 2019 - Jul 2019

Software Developer Intern

Chennai, India

- Contributed to **search tool** prototype development for the Brain Architecture Portal of Cold Spring Harbor Lab, NY.
- Built using **spaCy**, **word2vec**, and **cosine similarity** to analyze neuroscience articles, identifying evidence of connectivity and providing summaries, saving **30+** **hours** of manual review per week.

ShadowFax Technologies

May 2018 - Jul 2018

Backend Developer Intern

Bangalore, India

- Contributed in integrating **external APIs** and developing **data migration** scripts using **Django**.
- Pioneered a **heat map** based on the location of the rider and used **Google map APIs** to visualize.
- Collaborated with co-workers to establish backend conventions, principles, and patterns.

## Publications

- T. Khandelwal**, and R.K. Das, "A Multi-Task Learning Framework for Sound Event Detection using High-level Acoustic Characteristics of Sounds", *INTERSPEECH 2023* [DOI]
- T. Khandelwal**, et al., "Leveraging Audio-Tagging Assisted Sound Event Detection using Weakified Strong Labels and Frequency Dynamic Convolutions", *IEEE Statistical Signal Processing 2023* [DOI]
- T. Khandelwal**, et al., "Is Your Baby Fine at Home? Baby Cry Sound Detection in Domestic Environments", *APSIPA 2022* [DOI]

## Projects

- Sound event detection:** Formulated a state-of-the-art SED system leveraging embeddings extracted from **BEATs** in combination with **frequency dynamic convolutions**, resulted in **4th** position in **DCASE Challenge**. [Link]
- Information Retrieval:** Constructed an efficient and intelligent sentence retrieval framework for text documents using **TF-IDF** scores, **cosine similarity**, and **NLTK** for text processing. [Link]