Tanmay Khandelwal

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Education

NYU COURANT, NY
M.S. in Computer Science
📅 Incom. Sept 2023   📍 New York

BITS, PILANI
B.E. (Hons) in Electrical and Electronics Engineering
📅 July 2021   📍 Pilani, India
GPA: 8.43/10

Skills

PROGRAMMING
C++ • Java • Python • TypeScript • JavaScript • Matlab

FRAMEWORKS
SpringBoot • NodeJs • NestJs • Django • Jest • JUnit • MySQL • MongoDB • Redis • PyTorch • TensorFlow • SciKit • OpenCV

TOOLS
Kubernetes • Docker • Git • Postman • RabbitMQ • Azure Pipelines

Publications

INTERSPEECH 2023
T. Khandelwal, and R.K. Das, "A Multi-Task Learning Framework for Sound Event Detection using High-level Acoustic Characteristics of Sounds" [DOI]

IEEE-SSP 2023
T. Khandelwal, R.K. Das, A. Koh and E.S. Chng, "Leveraging Audio-Tagging Assisted Sound Event Detection using Weakified Strong Labels and Frequency Dynamic Convolutions" [DOI]

APSIPA 2022
T. Khandelwal, R.K Das and E.S. Chng, "Is Your Baby Fine at Home? Baby Cry Sound Detection in Domestic Environments" [DOI]

Coursework

Data Structures and Algorithms
Object Oriented Programming
Operating Systems
Computer Programming
Neural Networks and Fuzzy Logic
Information Retrieval
Data Mining
Digital Image Processing

Experience

SOFTWARE ENGINEER
Fortemedia, Singapore
📅 Sep 2021 – Present   📍 Remote
- 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 systems.

BACKEND DEVELOPER INTERN
Bajaj Finserv Health Limited
📅 Jul 2020 - Aug 2021   📍 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.

NLP RESEARCH INTERN
Healthcare Technology Innovation Centre, IIT Madras
📅 May 2019 – Jul 2019   📍 Chennai, India
- Contributed to the development of a **search tool** prototype 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.

BACKEND DEVELOPER INTERN
ShadowFax Technologies
📅 May 2018 – Jul 2018   📍 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.

Projects

SOUND EVENT DETECTION
DCASE Challenge 2023 [Link]
- Formulated a state-of-the-art SED system leveraging the embeddings extracted from **BEATs** in combination with **frequency dynamic convolutions**, resulting in a remarkable **4th** position in the challenge.

INFORMATION RETRIEVAL
Course Project [Link]
- Constructed an efficient and intelligent sentence retrieval framework for text documents using **TF-IDF** scores, **cosine similarity**, and **NLTK** for text processing.