Pavan Seshadri

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Education

Georgia Institute of Technology — Atlanta, GA
M.S Music Technology — *Aug 2022 – present*

- **Advisor**: Dr. Alexander Lerch
- **Coursework**: Digital Signal Processing, Music Recommender Systems

Georgia Institute of Technology — Atlanta, GA
B.S. in Computer Science, Minor in Music Technology — *Aug 2017 – Aug 2021*

- **Coursework**: Machine Learning, Deep Learning, Algorithms Honors, Robotics and Perception, Computer Graphics, Statistics and Applications, Music Recording & Mixing

Work Experience

Georgia Institute of Technology — Aug 2022 - present
Graduate Research Assistant — *Atlanta, GA*

- Investigating deep neural methods for NSF-funded project on automatic audio sensing of pedestrian activity
- Curating open source dataset for urban pedestrian sounds
- Advised by Dr. Alexander Lerch and Dr. Subhro Guhathakurta

Amazon — Aug 2021 - May 2022
Software Development Engineer, Machine Learning — *Seattle, WA*

- ML Engineer in the Catalog Product Knowledge organization supporting text-based product classification tasks
- Used AWS services to design and develop distributed systems for end-to-end infrastructure supporting large language models (BERT, etc.)
- Collaborated with research scientists on model and data evaluation to discover and solve performance bottlenecks.

Georgia Institute of Technology — Jan 2020 - May 2021
Undergraduate Research Assistant — *Atlanta, GA*

- Conducted research on deep neural methods for automatic music performance assessment (MPA)
- Presented work on contrastive learning for MPA at ISMIR 2021 [1]

Amazon — May 2020 - Aug 2020
Software Development Engineer Intern — *Seattle, WA*

- Designed and built an automatic evaluation feature in a DNN-training pipeline to support product classification
- Feature leverages AWS lambda, EMR, S3, and Spark to reduce model evaluation effort from 45-75 hours to minutes.

Publications

1. **Pavan Seshadri** and Alexander Lerch. "Improving Music Performance Assessment With Contrastive Learning". In *Proceedings of the 22nd International Society for Music Information Retrieval Conference,* ***ISMIR*** *2021,* ***(40% acceptance rate)***

2. Yun-Ning Hung, Karn N. Watcharasupat, Chih-Wei Wu, Iroro Orife, Kelian Li, **Pavan Seshadri**, and Junyoung Lee. "AVASpeech-SMAD: A Strongly Labelled Speech and Music Activity Detection Dataset with Label Co-Occurrence". *International Society for Music Information Retrieval Conference Late Breaking Demo ,* ***ISMIR*** *2021*

Projects

Neural Audio Fingerprinting Jan 2023 - Present
Advisor: *Dr. Alexander Lerch* *Atlanta, GA*

- Investigating metric learning and audio similarity methods to improve audio fingerprinting

Leveraging Negative Feedback for Sequential Music Recommendation Aug 2022 - Present
Advisor: *Dr. Peter Knees* *Atlanta, GA*

- Using transformer-based architectures to learn robust user profiles and sequential listening patterns from positive and negative user feedback for next-song music recommendation

Contrastive-based Automatic Music Performance Assessment [1] Jan 2021 - May 2021
Advisor: *Dr. Alexander Lerch* *Atlanta, GA*

- Proposed a novel deep neural model using contrastive learning for regression tasks in music performance assessment
- Exceeded SoTA performance for MPA regression tasks by 8-16% for metrics such as musicality, note accuracy, etc.
- Demonstrated that the proposed method results in better clustering of the model embedding space

Adapting Transformers for Downstream NLP tasks Mar 2021 – May 2021
Deep Learning Course Project *Atlanta, GA*

- Explored methods of model compression to reduce the necessary trained parameters of RoBERTa for downstream classification tasks
- Extended the work of Gururangan et. al, which showed benefits of task-specific pre-training in large language models and Pfeiffer et. al, which proposes AdapterHub, a framework for NLP transfomer model compression

Technical Skills

Areas: Music Information Retrieval, Natural Language Processing, Deep Learning, Machine Learning Engineering
Languages: Python, Java, C/C++, Bash, MATLAB
Developer Tools: Git, Vim, Docker
Libraries/Frameworks: PyTorch, Amazon Web Services, Pandas, Numpy, Scipy, Matplotlib, librosa, pySpark

Awards

3rd place @ Junior Design Expo, *College of Computing, Georgia Institute of Technology* Dec 2020
President's Undergraduate Research Award, *Georgia Institute of Technology* Aug 2020