HUANG XIE Doctoral Researcher

6+ years in developing machine learning models for audio understanding, audio-language multimodal learning, and audio information retrieval, and 10+ years in software development. Proficiency in machine learning, audio/text processing, data analysis, web development, and Python & Java programming.

Personal Info

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- Tampere, Finland
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- linkedin.com/in/huang-xie-28b7872bb
- orcid.org/0000-0001-7609-8049

Languages

Chinese	*Native*
English	*Professional*
Finnish	*Beginner*

Referees

Prof. Tuomas Virtanen
@ Tampere University
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Assoc. Prof. Okko Räsänen
@ Tampere University
okko.rasanen@tuni.fi

Employment

Doctoral Researcher | Research Assistant 03/2019 - Present
Audio Research Group, Tampere University, Finland

- Developed large machine learning models (e.g., CNNs, RNNs, transformers) for audio understanding, audio-language multimodal learning, and audio information retrieval, using techniques like self-supervised learning, contrastive learning.
- Constructed, analyzed, and processed large-scale audio/text datasets, performing tasks like feature extraction, semantic analysis, and classification.
- Published 9+ first-authored scientific papers in top-tier journals and conferences (e.g., IEEE/ACM TASLP, SPL, ICASSP).

Software Engineer 10/2015 - 05/2018
Bohai Commodity Exchange, Tianjin, China

- Developed key features for CloudBoce (, an E-Commerce platform), including shopping cart, order processing, and product management.
- Collaborated with cross-functional teams (e.g., UI designers, product managers) to define, design, and ship new features.
- Troubleshot and debugged issues related to performance, crashes, and other bugs, ensuring smooth and stable user experience.

Principal Java Developer 07/2014 - 09/2015
Qingdao Industrial Software Research Institute, Qingdao, China

- Led the development and delivery of multiple enterprise-grade software solutions (e.g., BPM, CMS), overseeing the full project lifecycle from planning to deployment.
- Mentored junior developers and performed code reviews to maintain high coding standards and best practices.
- Collaborated with cross-functional teams to define requirements, troubleshoot issues, and deliver high-quality software on schedule.
- Presented technical solutions to non-technical stakeholders, and managed technical documentation and reports.

Skills

Programming: Python, Java, JavaScript, SQL, C/C++, Kotlin
Machine Learning: PyTorch, Tensorflow, scikit-learn, Ray, Spark
Data Analysis: NumPy, SciPy, Pandas, NLTK, Matplotlib
Web Development: Java EE, Spring, Hibernate, Django, Flask, MySQL, Git

Education

PhD in Signal Processing and Machine Learning 01/2021 - Present
Tampere University, Tampere, Finland

M.Sc. in Data Engineering and Machine Learning 08/2018 - 11/2020
Tampere University, Tampere, Finland

M.Eng. in Software Engineering 09/2010 - 06/2014
University of Science and Technology of China, Hefei, China

Activities

- Reviewer for IEEE/ACM TASLP, SPL, ICASSP, WASPAA, DCASE, etc.
- Task coordinator for Language-based Audio Retrieval and Automated Audio Captioning in DCASE Challenge 2022 (), 2023 (), and 2024 ().

Publications (full list)

[1] Text-based Audio Retrieval by Learning from Similarities between Audio Captions

H. Xie, K. Khorrami, O. Räsänen, and T. Virtanen

2024 IEEE Signal Processing Letters arXiv

[2] Integrating Continuous and Binary Relevances in Audio-Text Relevance Learning

H. Xie, K. Khorrami, O. Räsänen, and T. Virtanen

2024 in Proc. Detect. Classif. Acoust. Scenes Events Work. (DCASE) arXiv

[3] Multi-label Zero-Shot Audio Classification with Temporal Attention

D. Dogan, **H. Xie**, T. Heittola, and T. Virtanen

2024 in Proc. Int. Workshop Acoust. Signal Enhanc. (IWAENC) arXiv

[4] Crowdsourcing and Evaluating Text-Based Audio Retrieval Relevances

H. Xie, K. Khorrami, O. Räsänen, and T. Virtanen

2023 in Proc. Detect. Classif. Acoust. Scenes Events Work. (DCASE) arXiv

[5] On Negative Sampling for Contrastive Audio-Text Retrieval

H. Xie, O. Räsänen, and T. Virtanen

2023 in Proc. Int. Conf. Acoustic., Speech and Signal Process. (ICASSP) arXiv

[6] Language-based Audio Retrieval Task in DCASE 2022 Challenge

H. Xie, S. Lipping, and T. Virtanen

2022 in Proc. Detect. Classif. Acoust. Scenes Events Work. (DCASE) arXiv

[7] Unsupervised Audio-Caption Aligning Learns Correspondences Between Individual Sound Events and Textual Phrases

H. Xie, O. Räsänen, K. Drossos, and T. Virtanen

2022 in Proc. Int. Conf. Acoustic., Speech and Signal Process. (ICASSP) arXiv

[8] Zero-Shot Audio Classification using Image Embeddings

D. Dogan, **H. Xie**, T. Heittola, and T. Virtanen

2022 in Proc. Eur. Signal Process. Conf. (EUSIPCO) arXiv

[9] Zero-Shot Audio Classification with Factored Linear and Nonlinear Acoustic-Semantic Projections

H. Xie, O. Räsänen, and T. Virtanen

2021 in Proc. Int. Conf. Acoustic., Speech and Signal Process. (ICASSP) arXiv

[10] Zero-Shot Audio Classification via Semantic Embeddings

H. Xie, and T. Virtanen

2021 IEEE/ACM Trans. Audio Speech Lang. Process. (TASLP) arXiv

[11] Zero-Shot Audio Classification Based on Class Label Embeddings

H. Xie, and T. Virtanen

2019 in Proc. Work. Appl. Signal Process. Audio and Acoustic. (WASPAA) arXiv