

Yi Liu

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Research Interests

Deep Generative Model, Audio and Speech, Parallel Computing, Data Mining.

Education

- Sept. 2024 to May 2026 **University of California San Diego**, MS in Electrical and Computer Engineering
- Machine Learning and Data Science track
- Sept. 2020 to June 2024 **Nanjing University**, BS in Acoustics, Physics Department
- GPA: 4.42/5.0
 - Coursework covers from Computer Science, Artificial Intelligence to Audio Signal Processing.

Experience

- Feb. 2024 to Aug. 2024 **Papergames**, Artificial Intelligence Engineer, Intern, Shanghai, China
- Designed and implemented machine learning algorithms to predict emotional words and speech from audio and align them to the audio.
 - Implement generative models for speech enhancement.
 - Migrate algorithms to the mobile platform(Android and IOS) and reduce memory consumption.

Projects

- Aug. 2024 to Aug. 2024 Automatic Chord Recognition and Sheet Generation Website Tool
- Developed a pipeline for automatic chord recognition and sheet generation.
 - Deployed the solution on Azure, including a visualization player website.
 - Tool Link <https://yi-liu.top/tools/>
- June 2022 to Dec. 2023 Audio Packet Loss Concealment
- Improved generative adversarial networks and attention-based networks into causal models to meet the latency and time complexity requirements.
 - Participated in the 2024 ICASSP Audio Deep Packet Loss Concealment Challenge, attaining an 8th place.
- June 2023 to July 2023 Whisper to Normal Speech Style Conversion
- Tested open-source variational autoencoder with pre-trained vocoder(WaveGAN) to convert whisper audio to speech audio.
 - Trained custom VITS model for style conversion from whisper to normal speech.
 - Demo Link <https://yi-liu.top/demos/whisper-to-speech-voice-conversion/>
- Aug. 2022 to Jan. 2023 Riscv32 full-system emulator

- Implemented riscv32 full-system emulator based on NJU-ProjectN, Including hardware emulation, OS emulation, software compatibility and debugging analysis.
- Demo Link <https://yi-liu.top/demos/emulator/> 
- June 2021 to May 2022 Transformer Abnormal Discharge Mode Detection with Sensor Array
 - Implemented sound source localization algorithms based on Beamforming for sensor array with CUDA. Test it on real data from acoustic camera.
- June 2022 Deployed YOLOv3 on Horizon X3 Development Board
 - Including software and hardware environment preparation, data collection, retrain YOLOv3, quantization and compression, deploy.

Technologies

- Languages Skilled in Python, C, C++, capable in Unix shell scripts, CUDA, Java, Matlab, Mathematica, MySQL.
- Frameworks Skilled in Pytorch, Tensorflow, XGBoost, scikit-learn, some experience with MPI parallel processing library, ISPC library, Eigen.
- Tools Git, Makefile, CMake, Docker, Latex, Parrot, FFmpeg, Azure.
- Algorithms machine learning, data mining, deep learning, speech and audio related algorithms, numerical method, static program analysis, computer graphics, data structure and algorithms.
- Platforms Unix/Linux, Windows

Awards

- June 2022 China Undergraduate Physics Tournament East National Division Top Award, China
 - Group tournament, participated as teamleader, top 3 among participants
- May 2022 Interdisciplinary Contest in Modeling Meritorious Winner Award
 - Group tournament, top 8% among participants
- Dec. 2021 The People's Scholarship, Nanjing University
- Sept. 2021 25th Forum of Sciences and Arts of Nanjing University Second Grade Award
- June 2021 China Undergraduate Physics Tournament National Division First Award, China
 - Group tournament, participated as teamleader, top 10 among participants