KUNLUN LI

500 W University Pkwy, Baltimore, MD 21210
+1 (626) 734-4045 | kli90@jh.edu | Website

RESEARCH INTERESTS

Medical Image Processing, Deep Learning, Machine Learning, Computer Vision, Digital Signal Processing

EDUCATION

Johns Hopkins University 08/2023-Present
Master of Science in Electrical and Computer Engineering *Baltimore, MD*

The University of Mississippi 08/2021-05/2023
Bachelor of Engineering in Electrical Engineering, GPA:3.72/ 4.0 *Oxford, MS*

North China University of Technology 09/2019-06/2021
Bachelor of Engineering in Electrical Information of Engineering *Beijing, China*

EXPERIENCES

Graduate Research Assistant 05/2024-Present
Johns Hopkins University, Prof. Eric Nalisnick *Baltimore, MD*

- Estimate the monocular depth for the given sign language dataset like ASL CITIZEN to extract the depth information for the given landmark. The depth information is extremely important to improve the accuracy in sign language recognition. Then applying the Active learning and Semi-supervised learning to the transformer model to alleviate the data scarcity problem in the sign language recognition. Finally, the model achieves 96% accuracy on the given dataset.

Undergraduate Research Assistant 08/2023-05/2023
VLSI and AI Research Lab, University of Mississippi, Prof. Azeemuddin Syed *Oxford, MS*

- Design a Zero Frequency Filter to extract the epoch (Glottal Closure Instant) in the speech data from speech, using the machine learning to train the speech data from CMU_ARCTIC speech synthesis databases. Comparing the performance with other existing filters and machine learning methods. Implement the method on VLSI by using VHDL, the method had also been implemented on the Raspberry pi.

Summer Research Program 06/2021-09/2021
Optimization of Digital Integrate Circuit, UCLA, Prof. Dejan Markovic *Los Angeles, CA*

- Developed and implemented a gate sizing methodology to significantly reduce both delay and energy consumption in circuits. Applied advanced optimization algorithms to adjust gate dimensions, achieving an efficient trade-off between circuit speed and power usage. Finally, achieving more than 50% delay and energy reduction as a result.

PROJECTS

Deep Learning-Based Liver Cancer Segmentation Using U-net and DALU-Net May 2024
Advisor: Prof. Vishal Patel

Use U-net and DALU-Net (Deep Attention LSTM U-Net) to train the data on the 3D IRCADb (3D Image Reconstruction for Comparison of Algorithm Database) to do the liver tumor segmentation. The dice coefficient for segmentation by using DALU-Net reach 0.899.

Evaluation of Subarachnoid Space Volume Using Segmentation Techniques in MRI Imaging May 2024

Advisor: Prof. Jerry L. Prince

A project which Aligning T1w and T2w images to a 1mm MNI space, employing FastSurfer for ventricle segmentation in brain MRI, synthesizing T2w images from existing T1w images using a Cycle Generative Adversarial Network (CycleGAN), and calculating SAS volume in T2-weighted MRI images through segmentation and traditional methods.

Epoch Extraction for Speaker Differentiation by using Zero Frequency Filtering May 2023

Advisor: Prof. Azeemuddin Syed

Designing the Zero Frequency Filter to extract the Epoch (glottal closure instant) from 1132 utterance collected from CMU_ARCTIC speech synthesis databases, implement the GMM to train extracted epoch and use recorded data to test the result. The test accuracy has been compared with other existed filters like ZFR or ZPZFR. The filter finally be implemented on the VLSI board by using VHDL.

PUBLICATION

- **Kunlun Li,** Junxiang Ma and Yixuan Zhang. "Optimization of a absolute value detector with domino logic and gate sizing." *4th International Conference on Informatics Engineering & Information Science* (2022), doi:10.1117/12.2627237.
- **Kunlun Li**, Daniel Ferro, Xu Zhao, Abdul Jabbar Syed, Anil K Vuppala, Azeemuddin Syed. "Matlab-based Epoch Extraction for Speaker Differentiation" Reviewing by *9TH ACM/IEEE Symposium on Edge Computing*.
- Runzhou Chen, **Kunlun Li**, Yixuan Wang, Eric Nalisnick. "SSLAL: Leveraging Semi-Supervised and Active Learning for Robust Depth-Enhanced Sign Language Recognition" Reviewing *by The IEEE/CVF Conference on Computer Vision and Pattern Recognition (2025) Nashville TN, Wed June 11th - Sun June 15th.*

SKILL

- **Programming Language:** Python, Matlab
- **Tools & Framework:** MIPAV, Fast Surfer, LaTeX, Pytorch
- **Language:** Mandarin (Native), English (Fluent), Japanese (Beginner)

GRADUATE COURSES

Digital Signal Processing	*Machine Learning for Signal Processing*	*Deep Learning*
Image Processing I	*Image Processing II*	*Introduction to Data Science*
Medical Imaging Systems	*Medical Image Analysis*	*Machine Perception*
Machine Intelligence	*Wavelet and Filter Bank*	*Random Signal Analysis*

HONORS & ACTIVITIES

- Chancellor's Honor Roll, The University of Mississippi **05/2023**
- Scholarships for International Undergraduates, The University of Mississippi **09/2021**
- Scholarship of Moral Education (top 10%), NCUT **06/2021**
- The First Prize of English Vocabulary Competition in NCUT **11/2019**
- The Second Prize of Listening Competition in NCUT **11/2019**