

EDUCATION

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- **University of Georgia – School of Computing** Athens, GA, USA
Doctor of Philosophy in Computer Science - Computer Science;
Aug 2023 - Now
Research Interest: Medical Image processing, Computational Neuroscience, LLMs.
 - **Southeast University – Computer Science and Engineering College** Nanjing, China
Master of Science - Computer Science and Engineering;
Sept 2020 - June 2023
Research Interest: Image processing, Computer Vision, HCI, Neuron reconstruction.
 - **Southeast University – CHIEN-SHIUNG WU College(Honor College)** Nanjing, China
Bachelor of Engineering - Information Science and Engineering; Major GPA: 3.63/4
July 2016 - June 2020
Courses: Signals and System, Data structure, Probability Statistics and Stochastic Process, Digital Signal Processing, Communication Electronic Circuit, Computer Architecture, Statistic Signal Processing, Digital Communication.

PUBLICATIONS

Research Interests: Multimodality Alignment^[1, 2, 6, 7, 8, 9, 10, 11], LLM Agent^[3, 4, 5], Video Generation^[1], Neuron Reconstruction^[2], and Robotics^[8, 10].

1. **Li, Y.**, Kim, S., Wu, Z., Jiang, H., Pan, Y., Jin, P., ... & Li, X. (2024). ECHOPULSE: ECG controlled echocardiograms video generation. ICLR, 2025.
2. **Li, Y.**, Jiang, S., Ding, L., & Liu, L. (2023). NRRS: a re-tracing strategy to refine neuron reconstruction. Bioinformatics Advances, 3(1), vbad054.
3. Dai, H., **Li, Y.**, Liu, Z., Zhao, L., Wu, Z., Song, S., ... & Liu, T. (2023). AD-AutoGPT: An Autonomous GPT for Alzheimer's Disease Infodemiology, PLOS Global Public Health, 2024.
4. Liu, Z., Zhong, A., **Li, Y.**, Yang, L., Ju, C., Wu, Z., ... & Li, X. (2023, October). Tailoring large language models to radiology: A preliminary approach to llm adaptation for a highly specialized domain. In International Workshop on Machine Learning in Medical Imaging (pp. 464-473).
5. Wang, P., Liu, Z., **Li, Y.**, Holmes, J. M., Shu, P., Zhang, L., ... & Liu, W. (2024, July). Fine-Tuning Large Language Models for Radiation Oncology, a Highly Specialized Healthcare Domain. In AAPM 66th Annual Meeting & Exhibition. AAPM.
6. Ma, C., Jiang, H., Chen, W., **Li, Y.**, Wu, Z., Yu, X., Zeng, F., ... & Li, X. (2024). Eye-gaze Guided Multi-modal Alignment Framework for Radiology. NeurIPS 2024.
7. Pan, Y., Jiang, H., Chen, J., **Li, Y.**, Zhao, H., Zhou, Y., ... & Liu, T. (2024). Eg-spikeformer: Eye-gaze guided transformer on spiking neural networks for medical image analysis, ISBI, 2025.
8. **Li, Y.**, Wu, Z., Zhao, H., Yang, T., Liu, Z., Shu, P., ... & Liu, T. (2024). ALDM-Grasping: Diffusion-aided Zero-Shot Sim-to-Real Transfer for Robot Grasping. arXiv preprint arXiv:2403.11459.
9. Xiong, F., Xie, P., Zhao, Z., **Li, Y.**, Zhao, S., Manubens-Gil, L., ... & Peng, H. (2024). DSM: Deep sequential model for complete neuronal morphology representation and feature extraction. Patterns, 5(1).
10. Wang, J., Wu, Z., **Li, Y.**, Jiang, H., Shu, P., Shi, E., ... & Zhang, S. (2024). Large language models for robotics: Opportunities, challenges, and perspectives. arXiv preprint arXiv:2401.04334.
11. Li, X., Zhao, L., Zhang, L., Wu, Z., Liu, Z., **Li, Y.**... & Shen, D. (2024). Artificial general intelligence for medical imaging analysis. IEEE Reviews in Biomedical Engineering.

INTERNSHIP

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- **MGH, Harvard Medical School, CAMCA Lab, Research Intern, May 2024 - Now.**
 Leveraging data from Massachusetts General Hospital (MGH), I developed the first ECG-driven cardiac ultrasound video generation model, which enables heart condition assessment using only wearable ECG devices. This groundbreaking innovation eliminates the reliance on fixed ultrasound equipment, significantly enhancing convenience and expanding application scenarios, particularly in remote or resource-limited environments where traditional imaging tools are inaccessible. The model employs a VQVAE-based approach to convert ultrasound videos into token sequences and integrates a Masked Autoencoder (MAE) training strategy. This methodology successfully produced a high-quality video generation model, achieving state-of-the-art (SOTA) results in the ECHO video generation domain and demonstrating the transformative potential of ECG-guided video synthesis for non-invasive cardiac diagnostics. Throughout the internship, my work received high praise from Dr. Xiang Li, an Associate Professor at Harvard Medical School, who recognized its innovative approach and real-world implications. Our work is currently under review at ICLR 2025, and we are optimistic about its potential impact in advancing cardiac care technologies.

- **Mayo Clinic, Research Intern, May 2024 - Now.**

Leveraging the computational resources provided by Mayo Clinic, I trained a Multi-Modal Large Language Model (MLLM) specifically designed for 3D medical imaging. This effort was aimed at developing a Medical Agent capable of automatically generating diagnostic reports for patient CT and MRI scans. Through the integration of advanced deep learning techniques and large-scale medical datasets, the model was fine-tuned to interpret complex 3D images and translate them into clinically relevant information. This work not only improved the efficiency and accuracy of diagnostic workflows but also provided the research team with a powerful tool for medical decision support, laying the groundwork for future advancements in AI-driven healthcare solutions.

- **Shenzhen Institute of Advanced Technology, Research Intern, March 2023 - May 2023.**

By applying my NRRS algorithm, I provided substantial assistance in significantly improving the quality of the neuron reconstruction results for the research team. Through careful analysis and targeted optimizations, I was able to identify key bottlenecks in their existing workflow and propose enhancements tailored to their specific data. After integrating my algorithm and implementing the proposed adjustments, the quality of their neuron reconstruction results improved markedly, reaching a new level of accuracy and reliability. Furthermore, I leveraged my extensive experience in neuron reconstruction to fine-tune their pipeline, which not only enhanced the precision of individual reconstructions but also boosted the overall performance and efficiency of their entire system. This optimization had a transformative impact, elevating their research outcomes and facilitating further advancements in their work.

- **Huawei, Software Engineer Intern, June 2020 - Sep 2020.**

Work as a telecommunication algorithm intern that uses AI algorithms to reduce the signal-to-noise ratio at the transmitter end of the Massive-MIMO antenna system.

- **ArcSoft, Software Developer Intern, Dec 2019 - Feb 2020.**

Use QT to implement an automatic testing software for face recognition programs.

- **China Mobile, 5G Telecommunications Engineer Intern, July 2019 - Sep 2019.**

Help senior engineer deploy and configure 5G communication base stations.

PROJECTS

- **AD-AutoGPT:** I developed the first Alzheimer's research agent leveraging the LangChain framework. By employing techniques such as goal decomposition and constructing an instruction library, the LLM agent can automatically collect, analyze, summarize, and synthesize the latest research advancements in the academic field.
- **LDM-Grasping:** I enhanced the diffusion model by incorporating an additional loss derived from the discriminator of a GAN model. This approach ensures that the generated images maintain the contours and positions of objects consistent with those in the initial condition image. The method enables the diffusion model to transform simulated data into realistic images in a controlled manner, addressing the Reality Gap problem in robotics applications.
- **Deid-GPT:** Medical data involves strict privacy concerns. We fine-tuned the LLaMA 3-70B large language model using a combination of synthetic data and de-identified real data, enabling the model to identify and anonymize personal information in medical reports. Similarly, we fine-tuned a vision-language model (VLM) using the same approach, allowing it to anonymize patient-identifiable information in medical videos effectively.

HONORS AND AWARDS

- Awarded 880+ citations on Google Scholar.
- The Second Prize of the National Mathematical Modeling Competition in 2018 (1st pick in SEU).
- Champion of the IEEE standard MicroMouse Maze Competition at SEU in 2018.

SKILLS AND HOBBIES

- **Programming language :** C/C++, Python, JAVA, JS, matlab, NEURON.
- **Sports:** Leader of college basketball team, Badminton, tennis.
- **Musical instrument:** Ukulele, Violin.