Chengyin Li

+1 (218) 398-6267 | cli6@hfhs.org | Google Scholar | LinkedIn | Website

RESEARCH INTERESTS

Medical Image Analysis with Deep Learning
- Fully Convolutional Network based medical image segmentation
- Transformer based medical image segmentation

AI for Healthcare with Foundation Models
- Multi-modal segmentation with Vision Language Models (VLMs)
- Treatment decision making with Large Language Models (LLMs)

Trustworthy AI
- Fairness, Explainability, Robustness

EDUCATION

Wayne State University, Detroit, Michigan, USA — 09/2019 – 08/2024
- Doctor of Philosophy in Computer Science
- Advisor: Dr. Dongxiao Zhu

University of Chinese Academy of Sciences, Beijing, China — 09/2013 – 07/2016
- Master of Science in Chemical Engineering

Nanjing University of Science and Technology, Nanjing, China — 09/2009 – 07/2013
- Bachelor in Chemical Engineering

WORK EXPERIENCE

Department of Radiation Oncology, Henry Ford Health — 08/2024 – Present
Researcher and Programmer in Radiation Oncology

Department of Radiation Oncology, Henry Ford Health — 05/2022 – 07/2024
Research Assistant

Trustworthy AI Lab, Wayne State University — 09/2019 – 05/2024
Graduate Research Assistant

The Shenzhen Institutes of Advanced Technology — 09/2017 – 12/2018
Research Assistant, Part-time

Institute of Process Engineering, Chinese Academy of Sciences — 09/2016 – 07/2017
Research Assistant

PUBLICATIONS

Google Scholar: https://scholar.google.com/citations?user=GeL7DtsAAAAJ&hl=en

Publications

[1] **Li, C.**, Qiang, Y., Sultan, R., Bagher-Ebadian, H., Zhu, D., Thind, K., and Chetty, I.J. (2024). "On the Implementation and Evaluation of Loss Functions for Robust Multiple Anatomy Segmentation on CT Images". *International Conference on the use of Computers in Radiation Therapy (ICCR).*

[2] **Li, C.**, Qiang, Y., Sultan, R., Bagher-Ebadian, H., Khanduri, P., Chetty, I.J. and Zhu, D. (2023). "FocalUNETR: A Focal Transformer for Boundary-aware Prostate Segmentation using CT Images". *The* 26^{th} *International Conference on Medical Image Computing and Computer Assisted Intervention (MICCAI).*

[3] **Li, C.**, Bagher-Ebadian, H., Sultan, R., Mohamed, E., Movsas, B., Zhu, D. and Chetty, I.J. (2023). "A New Architecture Combining Convolutional and Transformer-Based Networks for Automatic 3D Multi-Organ Segmentation on CT Images". *Medical Physics*.

[4] **Li, C.**, Dong, Z., Fisher, N., and Zhu, D. (2022). "Coupling User Preference with External Rewards to Enable Driver-centered and Resource-aware EV Charging Recommendation". *The* 23^{rd} *European Conference on Machine Learning and Principles and Practice of Knowledge Discovery in Databases (ECML-PKDD). Oral.*

[5] **Li, C.**, Sullivan, R. E., Zhu, D., and Hicks, S. D. (2022). "Putting the "mi" in Omics: Discovering Mirna Biomarkers for Pediatric Precision Care". *Pediatric Research*.

[6] Qiang, Y., **Li, C.**, Khanduri, P., and Zhu, D. (2024). "Fairness-aware Vision Transformer via Debiased Self-Attention". *In Proceedings of 18th European Conference on Computer Vision (ECCV)*.

[7] Peivandi, M., Zhang, J., Lu, M., **Li, C.**, Zhu, D., and Kou, Z. (2024). "Empirical Evaluation of the Segment Anything Model (SAM) for Brain Tumor Segmentation". *IEEE International Symposium on Biomedical Imaging (ISBI).*

[8] Li, X., Pan, D., **Li, C.**, Qiang, Y., and Zhu, D. (2023). "Negative Flux Aggregation to Estimate Feature Attributions". *The* 32^{nd} *International Joint Conference on Artificial Intelligence (IJCAI).*

[9] Khanduri, P., **Li, C.**, Sultan, R.I., Qiang, Y., Kliewer, J. and Zhu, D. (2023). "Proximal Compositional Optimization for Distributionally Robust Learning". *ICML 2023 New Frontiers in Adversarial Machine Learning Workshop*.

[10] Qiang, Y., **Li, C.**, Brocanelli, M., and Zhu, D. (2022). "Counterfactual interpolation augmentation (CIA): A unified approach to enhance fairness and explainability of DNN". *The* 31^{st} *International Joint Conference on Artificial Intelligence (IJCAI)*.

[11] Qiang, Y., Pan, D., **Li, C.**, Li, X., Jang, R., and Zhu, D. (2022). "AttCAT: Explaining Transformers via Attentive Class Activation Tokens". *Thirty-sixth Conference on Neural Information Processing Systems (NeurIPS)*.

[12] Li, X., Qiang, Y., **Li, C.**, Liu, S., and Zhu, D. (2022). "Saliency-guided Adversarial Training for Learning Generalizable Features with Applications to Medical Imaging Classification System". *ICML 2022 New Frontiers in Adversarial Machine Learning Workshop*.

[13] Li, X., **Li, C.**, and Zhu, D. (2020). "COVID-MobileXpert: On-device COVID-19 Patient Triage and Follow-up Using Chest X-rays". *International Conference on Bioinformatics and Biomedicine (BIBM)*.

Under Review

- **Li, C.**, Zhu H., Sultan, R. I., Khanduri, P., Bagher-Ebadian, H., Chetty, I.J., Thind, K., and Zhu, D. (2024). "Enhancing Unpaired Multi-Modal Medical Image Segmentation via Conditioned Text Embedding and Alternating Training". *Under-review.*
- **Li, C.**, Khanduri, P., Qiang, Y., Sultan, R. I., Chetty, I., and Zhu, D. (2023). "Auto-Prompting SAM for Mobile Friendly 3D Medical Image Segmentation". *Under-review.*
- Qiang, Y., **Li, C.**, Khanduri, P., and Zhu, D. (2023). "Interpretability-Aware Vision Transformer". *arXiv:2309.08035[cs.LG].*
- Sultan, R. I., **Li, C.**, Zhu, H., Khanduri, P., Brocanelli, M., and Zhu, D. (2023). "GeoSAM: Fine-tuning SAM with sparse and dense visual prompting for automated segmentation of mobility infrastructure". *arXiv preprint arXiv:2311.11319.*

HONORS & AWARDS

- Michael E. Conrad Award (Highest Honor at WSU CS Department) 2024
- Outstanding Graduate Research Assistant Award 2024
- Graduate Student Professional Travel Award 2022
- Thomas C. Rumble Fellowship Award 08/2019-05/2020

SERVICES

Conference Reviewer

- NeurIPS: Conference on Neural Information Processing Systems
- IJCAI: The International Joint Conference on Artificial Intelligence
- CVPR: The IEEE/CVF Conference on Computer Vision and Pattern Recognition
- MICCAI: International Conference on Medical Image Computing and Computer Assisted Intervention
- AdvML: ICML Workshop on New Frontiers in Adversarial Machine Learning
- ICLR: International Conference on Learning Representations

Journal Reviewer

- IEEE Transactions on Medical Imaging
- Transactions on Machine Learning Research (TMLR)
- Scientific Reports – Nature
- Smart Health
- BMC Genomics
- Journal of Medical Imaging

Invited Talks

- CS Seminar: Medical Image Segmentation with Transformers (link), Wayne State University 2024
- BBC Virtual Seminar, Karmanos Cancer Institute, Wayne State University 2024