Qilong Zhangli

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EDUCATION

Rutgers University Sept. 2021 – 2025(expected)

- **Ph.D. in Computer Science**
- Advisor: Dimitris Metaxas

University of California, Irvine Sept. 2018 – June 2021

- **B.S. in Computer Science** GPA 3.85/4.0
- Specialized in Intelligent Systems; SURP Fellowship

RESEARCH EXPERIENCES

Meta Menlo Park, CA

Research Scientist Intern May 2024 – Present

- Improving text-2-image diffusion model for complex scene understanding and personalized image generation.

Meta Menlo Park, CA

Research Scientist Intern May 2023 – November 2023

- Scene Text Image Generation with Diffusion Models: Significantly enhanced the capability of existing text-to-image diffusion models to generate images with text that is visually appealing and contextually coherent, achieved without the need for spatial information or predefined layouts as input. [First Author, CVPR'24]

NEC Labs America Princeton, NJ

Research Intern March 2023 – May 2023

- Language-driven Panoptic Segmentation: Engaged in the advanced synthesis of panoptic segmentations by harnessing the capabilities of high-capacity language models, bridging the gap between linguistic cues and visual segmentation tasks. [First Author, In Submission]

Rutgers University New Brunswick, NJ

Research Assistant Sept. 2021 – Present

- Top-Down Instance Segmentation: Developed Region Proposal Rectification(RPR) module, a Transformer-based module for robust detection and segmentation that out-performance the baseline methods on both anchor-based and anchor-free approaches.
- Multi-modality Semantic Segmentation with Transformers: Developed TransFusion, a Transformer-based architecture for rich cross-view context modeling and semantic dependency mining, addressing the critical issue of capturing long-range correlations between unaligned data from different image modalities.
- American Sign Language Recognition: Developed skeleton-based hand gesture recognition model using Graph Neural Network and Transfer Learning with self-attention mechanism in spatial and temporal domains.

California Plug Load Research Center (CalPlug) Irvine, CA

Student Researcher March 2020 – May 2021

- Harnessing Machine-Learning to Personalize Cleft Lip Markings: Developed an model for generating the most optimal cleft markings and projecting them onto surgical sites with High-Resolution Network (HR-Net).
- Plug Load Energy Usage Simulator: Developed a plug load simulator using Python, which precisely calculates the energy consumption, and worked on debugging/troubleshooting issues in the software before launching.
- Micro/nanobubble Machine: Designed the UI for the LCD touch screen of the machine and developed the functional breadboard program so that users could adjust machine's running time and the medicine dosage.

SELECTED PUBLICATIONS

1. Qilong Zhangli, Jindong Jiang, Di Liu, Licheng Yu, Xiaoliang Dai, Ankit Ramchandani, Guan Pang, Dimitris N Metaxas, and Praveen Krishnan. Layout-agnostic scene text image synthesis with diffusion models. In *The IEEE/CVF Conference on Computer Vision and Pattern Recognition*, 2024

2. Qilong Zhangli, Dimitris N. Metaxas, and Samuel Schulter. RESI: Resolving inconsistent semantics in multi-dataset panoptic segmentation. 2024
3. Song Wen, Hao Wang, Di Liu, Qilong Zhangli, and Dimitris Metaxas. Second-order graph odes for multi-agent trajectory forecasting. In *Proceedings of the IEEE/CVF Winter Conference on Applications of Computer Vision*, pages 5101–5110, 2024
4. Ligong Han, Song Wen, Qi Chen, Zhixing Zhang, et al. ProxEdit: Improving tuning-free real image editing with proximal guidance. In *Proceedings of the IEEE/CVF Winter Conference on Applications of Computer Vision*, pages 4291–4301, 2024
5. Di Liu, Qilong Zhangli, Yunhe Gao, and Dimitris Metaxas. Lepard: Learning explicit part discovery for 3d articulated shape reconstruction. *Advances in Neural Information Processing Systems*, 36, 2024
6. Di Liu, Xiang Yu, Meng Ye, Qilong Zhangli, Zhuowei Li, Zhixing Zhang, and Dimitris N Metaxas. DeFormer: Integrating transformers with deformable models for 3d shape abstraction from a single image. In *Proceedings of the IEEE/CVF International Conference on Computer Vision*, pages 14236–14246, 2023
7. Qilong Zhangli, Jingru Yi, Di Liu, Xiaoxiao He, Zhaoyang Xia, Qi Chang, Ligong Han, Yunhe Gao, Song Wen, Haiming Tang, et al. Region proposal rectification towards robust instance segmentation of biological images. In *International Conference on Medical Image Computing and Computer-Assisted Intervention*, pages 129–139. Springer, 2022
8. Xiaoxiao He, Chaowei Tan, Bo Liu, Liping Si, Weiwu Yao, Liang Zhao, Di Liu, Qilong Zhangli, Qi Chang, Kang Li, et al. Dealing with heterogeneous 3d mr knee images: A federated few-shot learning method with dual knowledge distillation. In *2023 IEEE 20th International Symposium on Biomedical Imaging (ISBI)*, pages 1–5. IEEE, 2023
9. Qi Chang, Zhennan Yan, Mu Zhou, Di Liu, Khalid Sawalha, Meng Ye, Qilong Zhangli, Mikael Kanski, Subhi Al'Aref, Leon Axel, et al. Deeprecon: Joint 2d cardiac segmentation and 3d volume reconstruction via a structure-specific generative method. In *International Conference on Medical Image Computing and Computer-Assisted Intervention*, pages 567–577. Springer, 2022
10. Zhaoyang Xia, Yuxiao Chen, Qilong Zhangli, Matt Huenerfauth, Carol Neidle, and Dimitris Metaxas. Sign language video anonymization. In *Proceedings of the LREC2022 10th Workshop on the Representation and Processing of Sign Languages: Multilingual Sign Language Resources, Marseille, France, 25 June 2022*, 2022
11. Di Liu, Yunhe Gao, Qilong Zhangli, Ligong Han, Xiaoxiao He, Zhaoyang Xia, Song Wen, Qi Chang, Zhennan Yan, Mu Zhou, et al. Transfusion: multi-view divergent fusion for medical image segmentation with transformers. In *International Conference on Medical Image Computing and Computer-Assisted Intervention*, pages 485–495. Springer, 2022
12. Lohrasb Ross Sayadi, Usama S Hamdan, Qilong Zhangli, and Raj M Vyas. Harnessing the power of artificial intelligence to teach cleft lip surgery. *Plastic and Reconstructive Surgery–Global Open*, 10(7):e4451, 2022

PRESENTATIONS

1. Combining AI and AR for knowledge and skill transfer in cleft surgery. *4th International Comprehensive Cleft Care Workshop (CCCW)*, Oct 7, 2021
2. AI/ML-based facial analytics for natural language. *National Science Foundation(NSF): Convergence Accelerator Expo 2021*, July 2021
3. Using machine learning to develop an artificial intelligence algorithm that guides nasolabial repair. *71st Annual Meeting of the California Society of Plastic Surgeons (CSPS)*, May 2021
4. Using machine learning to develop an artificial intelligence algorithm that guides nasolabial repair (oral). *78th Annual Meeting of the American Cleft Palate-Craniofacial Association (ACPA)*, Oct. 2021
5. Harnessing machine learning to place cleft lip markings (oral). *89th Annual Meeting of the American Society of Plastic Surgeons (ASPS)*, Oct. 2020

SKILLS

- **Programming**: Proficient in Python, C, C++, MySQL, MIPS Assembly, Arduino.
- **Tools**: PyCharm, AWS, Google Cloud Platform, PyTorch, TensorFlow, OpenCV, detectron2, diffusers.
- **Academic Service**: Reviewer for CVPR, ECCV, NeurIPS, ACL, EMNLP, MICCAI, IPMI, etc.