Mengyuan Liu

Fremont, CA, 94536 | liu.mengyu@northeastern.edu | +1 341-356-4038

Personal Website | LinkedIn | Github

EDUCATION

Northeastern University (NEU), MS in Computer Science 01/2023 – 12/2025

- GPA: 4.0/4.0 (Transcript) Award: Graduate Dean's Scholarship
- Vice President Research and Development: Multimedia Information Group (MIG)
- Research Assistant: Medical Image Segmentation, Object Recognition, Medical Software Development
- Head Teaching Assistant: Object-Oriented Design, Data Structure and Algorithm, Machine Learning

WORK EXPERIENCE

Research Assistant (Bone & Muscle Segmentation), NEU, San Jose 04/2024 - Current

- Boost segmentation accuracy by 40% with U-Net optimization and advanced loss functions in PyTorch.
- Propose Orthogonal U-Net to correct label errors, significantly improving segmentation accuracy.
- Develop pipeline for post-processing and reconstructing 3D models from 2D medical images for STL.

Software Engineer, Google Summer of Code @ Jitsi (Open Souce) 05/2024 – 08/2024

- Automate hand detection and raising with TypeScript and CV techniques for streamlined interaction.
- Centralize raised hand features in config.js and manage shared states with **React-Redux**.
- Extend **mobile** app features with React Native for a consistent cross-platform experience.

Software Engineer, GBCS Group, Alberta, Canada 05/2023 – 08/2023

- Implement features using Next.js, Mantine and React hooks for a fluid user experience.
- Implement secure authentication (MFA, bcrypt) and a **CI/CD** pipeline.
- Coordinate Azure deployments across time zones and use Agile for flexibility.

PROJECTS

MedVis Suite for Medical Data Visualization and Segmentation Open Source Coming Soon

- Enhance MRI image contrast and visibility for improved medical analysis.
- Enable 3D reconstruction from 2D MRI scans and segmentation results.
- Adapt the interface to support both TensorFlow and PyTorch CNN models.

In-Depth Evaluation on U-Net-Based Bone Segmentation Model GitHub Link

- Tune hyperparameters, data augmentation, and loss functions to improve accuracy by 5%.
- Prepare and structure datasets, including mask generation, to enhance model training and testing.
- Conduct robustness tests on various MRI datasets and views to validate model reliability.

SKILLS

Languages: Python, Matlab, C++, Java, JavaScript, TypeScript, PHP, R, C, C#, Ruby, Swift, SQL

Frameworks: PyTorch, TensorFlow, Django, Ruby on Rails, Node.js, ASP.NET, Spring

Development Ecosystem: Git, Webpack, Unix, Docker, Kubernetes, AWS, Azure, GCP

Soft Skills: Leadership, Communication, Collaboration, Fast Learner, Results-oriented, Self-driven

PUBLICATIONS

[1] **M. Liu**, D. Zhang, Y. Chen, T. Gong, H. Kainz, S. Song, J. Lee, "MedVis Suite: A Framework for MRI Visualization and U-Net-Based Bone Segmentation with In-Depth Evaluation", 2025 15th International Conference on Bioscience, Biochemistry and Bioinformatics (ICBBB 2025).

[2] Y. Zhang, D. Wang, J. Xu, **M. Liu**, P. Zhu, and W. Ren, "NeRF-VIO: Map-based Visual-Inertial Odometry with Initialization Leveraging Neural Radiance Fields", 2025 IEEE International Conference on Robotics and Automation (ICRA 2025) [Submitted]