Liang Mi

http://www.icemiliang.com

icemiliang@gmail.com

774-262-8824

Objective

Software Engineering Intern Spring & Summer 2019

Computer Vision and Machine Learning

Education

- **Doctor of Philosophy in Computer Engineering, 4.0** Aug. 2014 – Present
  Arizona State University, Tempe, AZ
- **Master of Science in Electrical and Computer Engineering, 3.8** May 2014
  Worcester Polytechnic Institute, Worcester, MA
- **Bachelor of Engineering in Electrical Engineering, 3.3** Jul. 2012
  Harbin Institute of Technology, Harbin, China

Skills

- **Languages**: C/C++, Python, Matlab **Libraries**: TensorFlow, Boost, Eigen, OpenCV/GL, ITK/VTK, etc.

Research Experience

- **Brain Image Analysis with Generative Adversarial Networks** Apr. 2018 – Present
  Geometric Systems Laboratory, Arizona State University
  - **Multi-modal**: Designing a deep learning model by using U-Nets and Wasserstein GANs with 3D kernels for multi-modal brain image analysis.
- **K-means Clustering with Optimal Transportation** Jan. 2018 – Present
  Geometric Systems Laboratory, Arizona State University
  - **Measure-preserve**: Proposed *iterative measure-preserving mapping* based on variational optimal transportation.
  - **Clustering**: Solve the k-means clustering problem with optimal transportation.
- **Indexing Brain Images with Wasserstein Distances** (ICCV 2017) Aug. 2015 – Oct. 2017
  Geometric Systems Laboratory, Arizona State University
  - **Indexing**: Proposed an indexing framework for analyzing whole brain atrophy with structure MRI and PET.
  - **Transportation**: Implemented 3D variational optimal transportation for computing Wasserstein distances.
- **Mesh Completion** Jan. 2015 – May 2015
  3D Scanning Laboratory, Stony Brook University
  - **ICP**: Used iterative closest point to register parametric face meshes.
- **Virtual Capsule Endoscopy,** (BodyNets 2013) Jan. 2013 – Jan. 2014
  Center for Wireless Information Networking Studies, Worcester Polytechnic Institute
  - **Simulation**: Created a virtual testbed to simulate capsule endoscopy for validating visual tracking algorithms.
- **Building Detection on LiDAR Images** (IST 2013) Jan. 2012 – May 2012
  Institute of Image and Information Processing, Harbin Institute of Technology
  - **Terran reconstruction**: Implemented a reconstruction algorithm by using*the minimum description length.*
  - **Building detection**: Proposed a two-step detection framework by reconstructing terrain and removing trees.

Work Experience

- **Software Engineering Intern (Imaging and Computer Vision)** May 2017 – Aug. 2017
  Intuitive Surgical, Sunnyvale, CA
  - **3D Reconstruction**: Designed and implemented an algorithm, in C++, for 3D volume reconstruction.
- **Software Engineering Intern (Image Processing)** Mar. 2014 – Aug. 2014
  Aware, Bedford, MA
  - **Gaussian downsampling**: Wrote a C++ library for image downsampling with Gaussian filtering.

Teaching Experience

- **Teaching Assistant** Aug. 2014 - Present
  Arizona State University
  - **CSE 259, Logic In Computer Science**
  - **CSE 310, Data Structures and Algorithms**
  - **CSE 110, The Principles of Programming Languages**
  - **SER 322, Database Management**
- **Grader** May 2013 - May 2014
  Worcester Polytechnic Institute
  - **CS/ECE 545, Digital Image Processing**
  - **ECE 3308, Introduction to Wireless Networks**

Select Courses

- **Math**: Conformal Geometry, Complex Analysis
- **Graphics**: Computer Graphics, Geometric Modeling
- **Vision**: Digital Image/Video Processing, Robotics: Perception
- **Deep**: Neural Networks for Machine Learning, Deep Learning in Visual Computing

Projects

- **Loop subdivision**: Implemented the Loop subdivision algorithm with the half-edge data structure in C++.
- **Conformal mapping**: Implemented the spherical conformal mapping algorithm with the half-edge structure in C++.
- **Image stitching**: Used OpenCV to stitch panoramic pictures.

Awards

- **Fellowship**: Department Doctoral Fellowship 2018.
- **Travel**: Graduate College Travel Award 2017, Department Conference Funding 2017.

Select Publications

Journal and conference papers:

- Singh, Shibani, Anant Srivastava, **Liang Mi**, Richard J. Caselli, Kewei Chen, Dhruman Goradia, Eric M. Reiman, and Yalin Wang. "Deep-learning-based classification of FDG-PET data for Alzheimer's disease categories." In 13th International Conference on Medical Information Processing and Analysis, vol. 10572, p. 105720J. International Society for Optics and Photonics, 2017.
- **Liang Mi**, Wen Zhang, Junwei Zhang, Yonghui Fan, Dhruman Goradia, Kewei Chen, Eric M. Reiman, Xianfeng Gu, and Yalin Wang. "An Optimal Transportation based Univariate Neuroimaging Index." In Proceedings of the IEEE Conference on Computer Vision and Pattern Recognition (ICCV), pp. 182-191. 2017.
- Guanqun Bao, Kaveh Pahlavan, **Liang Mi**, "Hybrid Localization of Micro-robotic Endoscopic Capsule inside Small Intestine by Data Fusion of Vision and RF Sensors", Sensors Journal, IEEE, Volume:PP , Issue: 99, Nov. 2014.
- **Liang Mi**, Guanqun Bao, Kaveh Pahlavan, "Design and Validation of a Virtual Environment for Experimentation inside Small Intestine", Proceedings of the 8th International Conference on Body Area Networks, 35-40, 30 Sep. 2013.
- **Liang Mi**, Shuang Zhou, Hao Chen, Yishuang Geng, Building Detection in Digital Surface Model, Imaging Systems and Techniques (IST), 2013 IEEE International Conference on, Beijing, China, 22-23 Oct. 2013.

Under review:

- **Liang Mi**, Wen Zhang, Xianfeng Gu, and Yalin Wang, "Variational Wasserstein Clustering", submitted to ECCV 2018.
- Wen Zhang, **Liang Mi**, Paul Thompson, Yalin Wang, "Multimodal Brain Image Fusion By Harmonic Maps Under Designed Riemannian Metric", submitted to ECCV 2018.
- Yonghui Fan, Gang Wang, **Liang Mi**, Yalin Wang, "Tetrahedron-based Heat Flow Signatures for Irregular Shell Shape Thickness Analysis", submitted to ECCV 2018.