

# MI, LIANG

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SUMMARY	I am a Ph.D student at Arizona State University, majoring in Computer Engineering. I am working on computational geometry and its applications in graphics, vision, and medical image analysis.	
EDUCATION	<b>Ph.D. Computer Engineering 4.0/4.0</b> 08/2014 - Present Arizona State University (ASU), Tempe, Arizona <ul style="list-style-type: none"><li>• Advisor: Dr. Yalin Wang, Co-advisor: Dr. Xianfeng Gu (Stony Brook University)</li><li>• Topic: Geometric analysis of brain images based on computational geometry</li></ul>	
	<b>M.S. Electrical and Computer Engineering 3.8/4.0</b> 05/2014 Worcester Polytechnic Institute (WPI), Worcester, Massachusetts <ul style="list-style-type: none"><li>• Thesis: "A Testbed for Simulation of Virtual Endoscopy", supervised by Dr. Kaveh Pahlavan</li></ul>	
	<b>B.E. Remote Sensing Science and Technology (Electrical Engineering) 3.3/4.0</b> 07/2012 Harbin Institute of Technology (HIT), Harbin, China <ul style="list-style-type: none"><li>• Thesis: "Terrain Reconstruction and Building Detection in Digital Surface Model"</li></ul>	
SKILLS	<b>Operating Systems:</b> Linux, Windows <b>Databases:</b> MySQL, PostgreSQL <b>Languages:</b> C/C++, Python, Matlab, etc. <b>Libraries:</b> OpenGL, OpenCV, VTK, SK-Learn, Django, etc.	
RESEARCH EXPERIENCE	<b>Geometric analysis of 3D images based on computational geometry</b> 09/2014 – Present Geometric Systems Lab (GSL), ASU <ul style="list-style-type: none"><li>• Working on 3D discrete optimal transportation problem for measuring sMRI &amp; PET images and its application on the classification and progression prediction of Alzheimer's Disease.</li><li>• Working on a linear model for a scoring system based on linear regression to characterize the disease progression from longitudinal brain imaging data.</li><li>• Designed a pipeline for processing the PET image to obtain its tetrahedral representation.</li><li>• Proposed a new algorithm for computing 3D weighted Voronoi diagram, optimal transportation, and the Wasserstein distance. Implemented it based on Voro++, in C/C++ with Visual Studio.</li></ul>	
	<b>Mesh completion</b> 02/2015 – 05/2015 3D Scanning Lab, Stony Brook University <ul style="list-style-type: none"><li>• Borrowed iterative closest point (ICP) method to rigidly align a partial face mesh with a parametric template. Then adopted the least square method to obtain the optimal parameters.</li></ul>	
	<b>Virtual capsule endoscopy</b> 01/2013 – 06/2014 Center for Wireless Information Network Studies (CWINS), WPI <ul style="list-style-type: none"><li>• Built a virtual testbed to simulated capsule endoscopy for validation of motion tracking method.</li><li>• Proposed a geometric model for quantifying the errors of the motion tracking method.</li></ul>	
	<b>Terrain reconstruction and building detection on LiDAR images</b> 08/2011 – 04/2012 Institute of Image and Information Processing (I <sup>3</sup> P), HIT <ul style="list-style-type: none"><li>• Designed and implemented an algorithm based on Bayesian framework, the minimum description length principle, and Morphological operations, for building detection in LiDAR images.</li></ul>	
WORK EXPERIENCE	<b>Software Engineering Intern (Imaging &amp; Computer Vision)</b> Summer 2017 Intuitive Surgical Inc., Sunnyvale, California <ul style="list-style-type: none"><li>• Designed and Implemented (in C++) a 3D volume reconstruction algorithm.</li></ul>	
	<b>Scientific Computing Intern</b> Summer 2015 Amyris Inc., Emeryville, California <ul style="list-style-type: none"><li>• Designed and Implemented a web server with HTML/CSS, Javascript, Python, MySQL, and Django.</li></ul>	
	<b>Software Engineering Intern</b> Summer 2014 Aware Inc., Bedford, Massachusetts <ul style="list-style-type: none"><li>• Wrote a C library with unit tests for Gaussian downsampling</li><li>• Fixed memory leaks and updated features for file I/O and finger print image processing.</li></ul>	

VOLUNTEER  
EXPERIENCE

**IOS Developer**

Fall 2014

Campuspy LLC, Worcester, Massachusetts

- Designed and Implemented an IOS application which interacts with a cloud server in Objective C
- Implemented video recording, saving, uploading, downloading, and display, and other server-based functionalities by using Apple Request APIs.

RELEVANT  
COURSES &  
SELECT  
PROJECTS

**Courses**

Computational Conformal Geometry, Geometric Modeling, Compute Graphics,  
Digital Image & Video Processing, Data Visualization,  
Introduction to Algorithms, Statistical Machine Learning.

**Projects**

- Spherical Conformal Mapping (C/C++)
- Loop Subdivision (C/C++)
- Image Stitching (C++, OpenCV)
- Rank Support Vector Machine (Matlab)
- Weighted Heat Map of Geospatial Data (Java Processing)
- Wifi Indoor Localization based on Triangulation and Least Square. (JAVA Android)

TEACHING  
EXPERIENCE

**Teaching Assistant**

- Data Structures and Algorithms (CSE 310) ASU — Taught recitation sessions.
- The Principles of Programming Languages (CSE 100) ASU
- Digital Image Processing (CS/ECE 545) WPI

PEER REVIEW  
SERVICES

Transactions on Biomedical Engineering (TBME), IEEE  
Journal of Applied Remote Sensing (jars), SPIE.  
International Journal of Distributed Sensor Networks

SELECT  
PUBLICATIONS

- *Singh S, Srivastava A, **Mi L**, Caselli RJ, Chen K, Goradia D, Reiman EM and Wang Y*, "Deep Learning based Classification of FDG-PET Data for Alzheimer's Disease Categories", 13th International Symposium on Medical Information Processing and Analysis (SIPAIM), San Andres Island, Co.lombia, Oct. 2017
- **Liang Mi**, Wen Zhang, Junwei Zhang, Yonghui Fan, Dhruvan Goradia, Kewei Chen, Eric M. Reiman, Xianfeng Gu, and Yalin Wang, "An Optimal Transportation based Univariate Neuroimaging Index", Accepted to IEEE International Conference on Computer Vision, Venice, Italy, Oct 22-29, 2017 .
- Shi, Jie, Yalin Wang, Yi Lao, Rafael Ceschin, **Liang Mi**, Marvin D. Nelson, Ashok Panigrahy, and Natasha Leporé. "Abnormal ventricular development in preterm neonates with visually normal MRIs." In 11th International Symposium on Medical Information Processing and Analysis (SIPAIM) 2015.
- Zhengyu Su, **Liang Mi**, Xianfeng Gu, Yalin Wang, " A Novel Isometry-Invariant Descriptor for Detection of Brain Cortical Surface Deformation Affected by Alzheimer's Disease", Arizona Alzheimer's Consortium Annual Scientific Conference, Tempe, AZ, May 14, 2015.
- 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.