Li Chen

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Research interest in Machine Learning, Computer Vision and Image Processing

Education

University of Washington , Seattle, WA — Sep. 2016 ∼ Aug. 2021

Ph.D. Candidate in Electrical Engineering, GPA: 3.89/4

Courses: Statistical learning, Computer vision, Computer vision in medical image analysis, MRI & Ultrasound

Fudan University , Shanghai, China — Sep. 2012 ∼ June 2016

B.S. in Electronic Engineering, GPA: 3.6/4, Ranking: 9%

Experience

Philips Research North America — Oct. 2021 ∼ now

Research Scientist. AI Based Medical Ultrasound Imaging Analysis — Boston, MA

Genentech, Inc. — May ∼ Aug. 2021

Research Intern. Advised by Dr. Reza Negahdar — South San Francisco, CA

- **Imaging and non-imaging feature fusion**
  - Developed a feature fusion model for improving COVID-19 classification from CTA images.

United Imaging Intelligence America — June ∼ Sep. 2020

Research Intern. Advised by Dr. Shanhui Sun and Terrence Chen — Boston, MA

- **Landmark tracking for stent enhancement**
  - Robust balloon marker tracking using deep learning and graph search to improve stent visualization.
  - Tracking with 95% recall / 50% precision / 44 frames per second / 0.36mm mean deviations.

Vascular Imaging Lab (Radiology)& Information Processing Lab (ECE) — Sep. 2016 ∼ now

Research Assistant. Advised by Dr. Chun Yuan (Radiology) & Jenq-Neng Hwang (ECE) Univ. of Washington

- **Quantitative intracranial artery modeling and vascular feature extraction**
  - Developed **iCafe** (C++/ITK/VTK software, 60k+ lines) for intracranial artery tracing and labeling.
  - Novel AI based artery tracing, refinement and labeling algorithms to automate the process.
  - **Five** (1 2 3 4 5) first-author journal papers and **fifteen** conference publications ranging from technical development, validation and medical applications. **Editor's pick** by Magnetic Resonance in Medicine.
- **Fully automated vessel wall segmentation and quantification**
  - A novel vessel wall segmentation algorithm in polar coordinate system using **deep learning** (paper).
  - **Transfer learning** and **active learning** techniques for adaptation to multiple vascular beds.
  - Validated on **48,000** popliteal arteries (paper), a workload of **67** years for a human reader.
  - **Winner** for American Heart Association/Amazon Web Services Prize Competition.
- **Carotid atherosclerotic lesion screening with fast MR solution**
  - A 5-minute MR screening using **deep learning** for cardiovascular risk assessments.
  - Modules include fast imaging, image quality assessment, artery detection, and lesion classification.
  - Domain adaptive lesion classifier applicable to three new datasets without additional annotations.

Medical Imaging Lab — Oct. 2013 ∼ June 2016

Undergraduate Researcher, Project leader, Advised by Dr. Huiliang Shang and Yi Guo — Fudan University

- **Modernizing Traditional Chinese Medicine diagnosis methods**
  - Developed algorithms in tongue **image analysis** and **data-mining** of prescriptions. (Paper (1 2 3 4)

- **Capstone research: Vascular image registration using circuit simulation**
  - Represent vasculatures as circuits for robust matching (paper). **Best thesis** in Fudan University.

Select Publications

[1] **Li Chen**, Wenjin Liu, et al. Deep Open Snake Tracker for Vessel Tracing. Medical Image Computing and Computer Assisted Intervention (MICCAI), 2021. (early accepted)

[2] **Li Chen**, Thomas Hatsukami, et al. Automated Intracranial Artery Labeling using a Graph Neural Network and Hierarchical Refinement. Medical Image Computing and Computer Assisted Intervention (MICCAI), 2020. (paper) (code)

[3] **Li Chen**, Gador Canton, et al. Fully automated and Robust Vessel Wall Feature Extraction from Standardized Knee MRI. Magnetic Resonance in Medicine (IF:3.9), 84(4):2147-2160, 2020.(paper) (code) (web)

[4] **Li Chen**, Jie Sun, et al. Automated Artery Localization and Vessel Wall Segmentation of Magnetic Resonance Vessel Wall Images using Tracklet Refinement and Polar Conversion, IEEE Access (IF:3.7), 2020. (paper) (code)

[5] **Li Chen**, Huilin Zhao, et al. Domain Adaptive and Fully Automated Carotid Artery Atherosclerotic Lesion Detection using an Artificial Intelligence Approach (LATTE) on 3D MRI, Magnetic Resonance in Medicine (IF:3.9), 86(3):1662-1673, 2021. (paper) (code)

[6] **Li Chen**, Gaoang Wang, et al. Simultaneous Intracranial Artery Tracing and Segmentation from Magnetic Resonance Angiography by Joint Optimization from Multiplanar Reformation. Medical Image Computing and Computer Assisted Intervention (MICCAI) workshop, 2019. (paper)

[7] **Li Chen**, Jie Sun, et al. Quantitative Assessment of the Intracranial Vasculature in an Older Adult Population using iCafe (intraCranial Artery Feature Extraction). Neurobiology of Aging (IF:4.4), 79:59-65, 2019. (paper)

[8] **Li Chen**, Mahmud Mossa-Basha, et al. Development of a quantitative intracranial vascular features extraction tool on 3DMRA using semiautomated open-curve active contour vessel tracing. Magnetic Resonance in Medicine (IF:3.9), 79(6):3229-3238, 2018. (paper) (web)

For whole publication list of 28 peer-reviewed full papers (15 as first-author), link to **Curriculum Vitae** (clatfd.cn/cv#pub)

Technical Skills

Computer Languages	C/C++, Python, Java	**Image processing**	OpenCV, Matlab, ITK
Machine learning	Tensorflow, Keras, PyTorch	**Web development**	php, HTML,js, MySQL

Awards

2019, 2020	Magna Cum Laude Merit Award, ISMRM
2018	2018 Outstanding Research Award, OCSMRM
2015	Mathematical Contest in Modeling 2015 (Meritorious Winner, top 10%)
2009 $\sim$ 2015	Shu Ping Scholarship (6 years, top 3%), Fudan Scholarship (2 years, top 15%)
2009, 2011	"INTEL" Innovation Contest in Shanghai

Others

- Organizer of the **Carotid Vessel Wall Segmentation Challenge** (MICCAI/SMRA 2021)
- Technical director of Fudan Students Union, 2014
- 9 Free Apps in Windows App Store: Downloaded for more than 63,000 times
- Link to all publications and projects in Curriculum Vitae: **clatfd.cn/cv**