Huayu **Zhang**

Ph.D. Student · UW-Madison

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Education

UW-Madison — *Madison, WI, USA*

MS/Ph.D. in Electrical Engineering — *Sep. 2015 - Present*

- Interested in Machine Learning/Signal processing

Tsinghua University — *Beijing, China*

B.E. in Engineering Physics — *Sep. 2011 - Jul. 2015*

- GPA: 92/100, rank: 2/149
- Excellent bachelor thesis
- Minor in computer technology

Publications

Conference — *2015*

- Peng C, **Zhang H**, Wu J, Shao X, Chen Y, Li Q, Fakhr E G, and Ying K. Iterative Residual Based Deconvolution Partial Volume Correction for Brain PET- MRI. ISMRM 23rd Annual Meeting, Toronto, Canada, 2015, 2475.

Conference — *2016*

- **Huayu Zhang**, and Yuxiang Xing. Limited-angle Multi-energy CT using Joint Clustering Prior and Sparsity Regularization. SPIE Medical Imaging, , San Diego, USA, 2016.
- **Huayu Zhang**, and Yuxiang Xing. Reconstruction of Limited-angle Duel-Energy CT Using Mutual Learning and Cross-estimation (MLCE). SPIE Medical Imaging, San Diego, USA, 2016.

Experience

Key Laboratory of Particle & Radiation Imaging, Tsinghua University — *Beijing, China*

Undergraduate Research Assistant for <Limited Angle Spectra CT Reconstruction> — *Sep. 2014 - Jul. 2015*

- Designed an easy and economic Multi-energy CT scan strategy.
- Proposed a mutual learning and cross-estimation (MLCE) method for DECT limited-angle problems, which incoporates machine learning approaches (neural networks) to study the relationship of inter-energy data and reduce the sampling data required by nearly 50%.
- Proposed a clustering-based method for Multi-energy CT limited-angle reconstruction, which mitigates the limited-angle artifacts by exerting a strong prior structural information constraints and reduces the sampling data required by nearly 66% for Tri-energy CT.
- Developed a CT reconstruction toolbox (https://github.com/GUG11/CT-Reconstruction)

NucMed technology Ltd — *Beijing, China*

Internship — *Jul. 2014 - Aug. 2014*

- Developed nuclear signal processing software with Butterworth filter and non-local mean filter.

Center for Biomedical Imaging Research, Tsinghua University — *Beijing, China*

Undergraduate Research assistant for <Partial Volume Correction in Position Emission Tomography(PET)> — *Sep. 2013 - Nov. 2014*

- Proposed a method to calculate Point Spread Function (PSF) of PET systems reaching an accuracy of 0.1mm through simulation.
- Proposed a feedback network method, which improved the RBV correction result and facilitated 5mm lesion detection.
- wrote, as the second author, a conference paper titled "Iterative Residual Based Deconvolution Partial volume Correction for Brain PET-MRI", published in **International Society for Magnetic Resonance in Medicine 2015**.

Course Projects

Pipelined microprocessor

UW-Madison *Oct.2015 - Nov. 2015*

- Implemented a microprocessor model using verilog and with 16 instructions and five stages pipelined registers.
- Accelerated the processor with data forwarding and register bypassing technology.
- Implemented a cache controller which improved the efficient of the memory management.

Ad-hoc imaging systems on Android phones

UW-Madison *Sep. 2015 - Dec. 2015*

- Designed a camera motion tracking system with 10cm accuracy
- Designed a handheld near-field imaging systems which could imaging non-line-of-sight objects.

Fast MRI reconstruction

Tsinghua University *Oct. 2013 - Dec. 2013*

- Accelerated parallel sampling using GRAPPA(Generalized Auto-calibrating Partially Parallel Acquisition).
- Combined interpolated compressed sensing with GRAPPA, enabled 4-fold under-sampling without obviously degrading image quality.

Honors & Awards

2014	**Scholarship,** Tsinghua University Outstanding Study Award 2014	*Beijing, China*
2014	**Scholarship,** Tsinghua University Evergrande Scholarship	*Beijing, China*
2014	**3rd Prize,** Tsinghua University "Challenge Cup" competition of science and technology	*Beijing, China*
2014	**Scholarship,** Tsinghua University Outstanding Study Award 2014	*Beijing, China*
2013	**Scholarship,** Tsinghua University Outstanding Study Award 2014	*Beijing, China*
2012	**Scholarship,** Tsinghua University Outstanding Study Award 2014	*Beijing, China*

Skills

Programming	Python (Fluent), C/C++ (Fluent), Matlab (Professional), Java (Familiar), MySQL (Basic)
Computer skills	Linux, Git, Latex, Markdown, Poster
Languages	English, Chinese (Native)