

# Huayu Zhang

PH.D. STUDENT · UW-MADISON

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## Education

### UW-Madison

MS/PH.D. IN ELECTRICAL ENGINEERING

- Interested in Machine Learning/Signal processing

Madison, WI, USA

Sep. 2015 - Present

### Tsinghua University

B.E. IN ENGINEERING PHYSICS

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

Beijing, China

Sep. 2011 - Jul. 2015

## 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 Dual-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 incorporates machine learning approaches (neural networks) to study the relationship of inter-energy data and reduces 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 a 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 abstract 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 with 16 instructions and five stages pipelined registers using verilog.
- Accelerated the processor with data forwarding and register bypassing technology.
- Implemented a cache controller improving 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).
- Enabled 4-fold under-sampling without obviously degrading image quality by combining interpolated compressed sensing with GRAPPA

## Honors & Awards

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2014	<b>Scholarship</b> , Tsinghua University Outstanding Study Award 2014	Beijing, China
2014	<b>Scholarship</b> , Tsinghua University Evergrande Scholarship	Beijing, China
2014	<b>3rd Prize</b> , Tsinghua University “Challenge Cup” competition of science and technology	Beijing, China
2014	<b>Scholarship</b> , Tsinghua University Outstanding Study Award 2014	Beijing, China
2013	<b>Scholarship</b> , Tsinghua University Outstanding Study Award 2014	Beijing, China
2012	<b>Scholarship</b> , Tsinghua University Outstanding Study Award 2014	Beijing, China

## Skills

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