

JOONSUNG LEE

Center for Neuroscience Imaging Research, Sungkyunkwan University,
2066, Seobu-ro, Jangan-gu, Suwon, Korea
+82 10-6633-8417
joonsung@skku.edu

EDUCATION

MASSACHUSETTS INSTITUTE OF TECHNOLOGY

PhD, Electrical Engineering and Computer Science

Cambridge, MA
Feb 2006 – Jan 2011

- Developed local SAR constrained RF pulse design for 7T parallel transmit system
- Studied E and H field simulations for local SAR estimation
- Developed compress sensing (CS) methods for B0 mapping, B1+, B1- mapping, chemical shift imaging (CSI), and clinical imaging
- Developed and testing fast *in vivo* B1+ mapping of the parallel transmit system in 7T
- Studied multi-slice excitation methods for parallel transmit in 7T
- Studied fast volumetric brain CSI; implemented its pulse sequence
- Developed lipid suppression methods for CSI by optimal 3D Filter and corresponding variable-density spiral trajectory
- Studied low-SNR brain metabolite estimation
- Studied registration of MEMPRAGE (T1 weighted image) and CSI data using software packages: FREESURFER made at Martinous center in Boston, USA and FSL made at FMRIB Analysis Group, Oxford, UK.

Master of Science, Electrical Engineering and Computer Science

Sep 2003 - Jan 2006

- Studied dereverberation of acoustic channels using multiple blind observations from microphones
- Studied superresolution image restoration using blind equalization and blind source separation methodologies in the data communication field
- Studied volterra filters and their multi-linear representations and blind identification for nonlinear channels

SEOUL NATIONAL UNIVERSITY

Bachelor of Science, Electrical Engineering

Seoul, Korea
Mar 2000 - Aug 2003

EXPERIENCE

SUNGKYUNKWAN UNIVERSITY

Research Professor, Center for Neuroscience Imaging Research

Suwon, Korea
Mar 2015 –

YONSEI UNIVERSITY COLLEGE OF MEDICINE

Research Assistant Professor, Department of Biomedical Science

Managing and doing research support for small animal imaging center with Bruker 9.4T

Seoul, Korea
Mar 2014 – Feb 2015

YONSEI UNIVERSITY

Postdoc Fellow, Severance Integrative Research Institute for Cerebral & Cardiovascular Diseases

- Managed and did research support for Bruker 9.4T in small animal imaging center
- Developed Bruker MR pulse sequences and reconstruction methods for Hyperpolarized 13C MRI
- Developed vessel wall imaging and T1 mapping methods for mouse cardio using MRI

Seoul, Korea

Postdoc Fellow, Electrical & Electronic Engineering

Feb 2011 – Apr 2013

- Developed conductivity mapping methods using MRI (MREPT)
- Developed MR pulse sequences and reconstruction methods for Hyperpolarized 13C MRI

SIEMENS MEDICAL SOLUTIONS

Intern, MR PLM A Advanced Neurology

Implemented brain segmentation in Image Calculation Environment (ICE)

Erlangen, Germany
Summer 2007

MASSACHUSETTS INSTITUTE OF TECHNOLOGY

Teaching Assistant, 6.556/ HST. 580

Data Acquisition and Image Reconstruction in MRI taught by Professor Elfar Adalsteinsson

Cambridge, MA
Fall 2006

SAMSUNG ELECTRONICS CO.

Intern, Digital Media R&D Center

Developed blind image deconvolution for digital TV

Suwon, Korea
Winter 2004

TEACHING EXPERIENCE

YONSEI UNIVERSITY

- Introduction to Medical Imaging (Guest Lecturer, four lectures)
- Introduction to Nanomedical Science and Technology I (Guest Lecturer, two lectures)

Seoul, Korea
Fall 2011
Spring 2011

PROGRAMMING SKILLS

- Method Programming on Bruker MRI scanners
- Pulse sequence programming (IDEA) on Siemens MRI scanners (IDEA course certification)
- Image Reconstruction programming (ICE) on Siemens MRI scanners
- Proficiency in C, C++ and Matlab programming

PUBLICATIONS (PEER REVIEWED JOURNAL PAPERS)

- J. Lee, J. Shin, D.-H. Kim; MR based Conductivity Imaging using Multiple Receive Coils, Magnetic Resonance in Medicine, early view, 2015
- J Shin, M. J. Kim, J. Lee, Y. Nam, M. Kim, N. Choi, S. Kim, D.-H. Kim; Initial Study on In Vivo Conductivity Mapping of Breast Cancer Using MRI; Journal of Magnetic Resonance Imaging, Aug 2015
- N Choi, J. Lee, M. Kim, J. Shin, D.-H. Kim; A Modified Multi-Echo AFI for Simultaneous B1+ Mapping and Phase Mapping; Magnetic Resonance Imaging, May 2014
- M. Kim, J. Lee, S.-Y. Zho, D.-H. Kim; Accelerated MR Whole Brain Imaging with Sheared Voxel Imaging using Aliasing Separation Gradients; Medical Physics, May, 2013
- J. Lee, Y. Song, N. Choi, S. Cho, J. Seo, D.-H. Kim; Noninvasive Measurement of Conductivity Anisotropy at Larmor frequency using MRI, Computational Mathematical Methods in Medicine, special issue, Jan, 2013
- J. Seo, D.-H. Kim, J. Lee, O. Kwon, S. Sajib, E. Woo; Electrical tissue property imaging using MRI at dc and Larmor frequency, Inverse Problems, July, 2012
- J. Lee, M. Gebhardt, L. L. Wald, E. Adalsteinsson; Local SAR in parallel transmission pulse design, Magnetic Resonance in Medicine, June, 2012.
- J. Seo, M. Kim, J. Lee, N. Choi, E. Woo, H. Kim, O. Kwon, D.-H. Kim, Error analysis of non-constant admittivity for MR-based electric property imaging, IEEE TMI, Feb 2012