Jaeseok Park *Ph.D., Prof.*

Medical Imaging and Signal Lab. (MISL)
Department of Biomedical Engineering
Sungkyunkwan University, Republic of Korea
jaeseokp@skku.edu, http://misl.skku.edu

MAJOR REARCH INTERESTS

The objective of my research is to develop novel methodologies in signal processing for medical imaging. Research interests include: 1) signal processing for medical imaging, 2) image reconstruction, 3) machine learning particularly for deep learning, 4) clinical translations to cancer, stroke, demential, Alzheimer, and cardiac diseases.

EDUCATION

2001-2005	PhD in Biomedical Engineering (Signal Processing, Medical Imaging), Northwestern University, Dissertation: Magnetic Resonance Angiography using Parallel Data Acquisition (Advisor: Dr. Debiao Li)
1999-2001	MS in Mechanical Engineering (Fluid Dynamics), University of Michigan Dissertation: Numerical and Experimental Simulation of Low Velocity Sub-Cooled Micro-Gravity Two-Phase Flow in Earth Gravity (Advisor: Dr. William Schultz)
1992-1999	BS in Mechanical and Aerospace Engineering, Seoul National University, including Military Service (1993-1996)

PROFESSIONAL EXPERIENCES

2015-Present	Associate Professor (Tenured), Medical Imaging and Signal Lab., Department of Biomedical Engineering, Sungkyunkwan University, Republic of Korea
2011-2015	Assistant, Associate Professor, Department of Brain and Cognitive Engineering, Korea University, Seoul, Republic of Korea
2008-2011	Assistant Professor, Department of Radiology, Yonsei University, Seoul, Republic of Korea
2005-2008	Senior Scientist, Siemens Medical Solution, Erlangen, Germany

PROFESSIONAL SOCIETIES AND ORGANIZATIONS

2001-Present	International Society of Magnetic Resonance in Medicine (ISMRM)
2008-Present	Korean Society of Magnetic Resonance in Medicine (KSMRM)
2005-Present	Ad hoc reviewers for IEEE Transactions on Medical Imaging, Neuroimage, Magnetic Resonance in Medicine (MRM), Journal of Magnetic Resonance Imaging (JMRI), Scientific Report
2012-Present	Associate Editor for Biomedical Engineering Letters (BMEL)
2016-Present	Editor-In-Chief for Investigative MRI (iMRI)

TEACHING COURSES

Engineering Mathematics I & II, Linear Algebra, Signals and System, Probability and Random Process, Medical Imaging, Magnetic Resonance Imaging

LANGUAGES

Korean (mother tongue), English (fluent)

RESEARCH GRANTS

2018-2022	National Research Foundation, Accurate quantification of neurodegenerative diseases; Role: PI
2017-2020	National Research Foundation, Development of novel MRI methods for ischemic stroke; Role: PI
2016-2021	National Research Foundation, Imaging-based characterization of small vessel diseases; Role: Co-PI
2016-2018	National Research Foundation, Technique Translation Program, Ultrafast Multiplexing MRI; Role: PI
2011-2014	National Research Foundation, Quantitative Oxygenation and pH Mapping in Brain Cancer; Role: PI
2008-2011	National Research Foundation, Quantitative Mapping of Human Brain Development in Children and Adolescents using Novel High-Resolution Magnetic Resonance Imaging Method; Role: Co-PI
2009-2011	National Research Foundation, Basic Science Research Program, High-Resolution 3D Contrast-Enhanced Whole-Brain MRI Method for Accurate Detection of Small Metastases; Role: PI
2009-2012	National Research Foundation, Basic Science Research Program, Novel Black-Blood Cerebral Vascular MRI Method and its Clinical Applications; Role: PI

PUBLICATIONS

- J. S. Park, E. Lim, S.-H. Choi, C.-H. Sohn, J. Lee, and J. Park, "Model-Based High-Definition Dynamic Contrast Enhanced MRI for Concurrent Estimation of Perfusion and Permeability," Medical image analysis, 2019

- H. Lee, J. J. Chung, J. Lee, S.-G. Kim, J.-H. Han, and J. Park, "Model-based Chemical Exchange Saturation Transfer MRI for Robust z-Spectrum Analysis," IEEE transactions on medical imaging, 2019
- H. Kim, S. Park, E. Y. Kim, and J. Park, "Retrospective multi-phase non-contrast-enhanced magnetic resonance angiography (ROMANCE MRA) for robust angiogram separation in the presence of cardiac arrhythmia," Magnetic Resonance in Medicine, 2018
- H. Lee, E. Y. Kim, C.-h. Sohn, and J. Park, "Rapid whole-brain gray matter imaging using single-slab three-dimensional dual-echo fast spin echo: A feasibility study," Magnetic resonance in medicine, 2017, vol. 78, no. 5, pp. 1691–1699
- H. Kim, D.-h. Kim, C.-h. Sohn, and J. Park, "Rapid chemical shift encoding with single-acquisition single-slab 3d Grase," Magnetic resonance in medicine, 2017, vol. 78, no. 5, pp. 1852–1861
- S. Park and J. Park, "SMS-HSL: Simultaneous multislice aliasing separation exploiting hankel subspace learning," Magnetic resonance in medicine, 2017, vol. 78, no. 4, pp. 1392–1404
- S. Park, E. Y. Kim, C.-H. Sohn, and J. Park, "Dynamic Contrast-Enhanced MR Angiography Exploiting Subspace Projection for Robust Angiogram Separation," IEEE transactions on medical imaging, 2017, vol. 36, no. 2, pp. 584–595
- H. Lee, C.-H. Sohn, and J. Park, "Current-induced alternating reversed dual-echo-steady-state for joint estimation of tissue relaxation and electrical properties," Magnetic resonance in medicine, 2017, vol. 78, no. 1, pp. 107–120
- S. Park and J. Park, "Accelerated dynamic cardiac MRI exploiting sparse-Kalman-smoother self-calibration and reconstruction (k- t SPARKS)," Physics in medicine and biology, 2015, vol. 60, no. 9, p. 3655
- H. Lee, W. C. Jeong, H. J. Kim, E. J. Woo, and J. Park, "Alternating steady state free precession for estimation of current-induced magnetic flux density: A feasibility study," Magnetic resonance in medicine, 2016, vol. 75, no. 5, pp. 2009–2019
- H. Kim, D.-H. Kim, and J. Park, "Variable-flip-angle single-slab 3D GRASE imaging with phase-independent image reconstruction," Magnetic resonance in medicine, 2015, vol. 73, no. 3, pp. 1041–1052
- S. Park and J. Park, "Compressed sensing MRI exploiting complementary dual decomposition," Medical Image Analysis, 2014, vol. 18, no. 3, pp. 472–486
- S. Yang, Y. Nam, M.-O. Kim, E. Y. Kim, J. Park, and D.-H. Kim, "Computer-Aided Detection of Metastatic Brain Tumors Using Magnetic Resonance Black-Blood Imaging," Investigative Radiology, 2013, vol. 48, no. 2, pp. 113–119
- H. Lee and J. Park, "SNR-optimized phase-sensitive dual-acquisition turbo spin echo imaging: A fast alternative to FLAIR," Magnetic Resonance in Medicine, 2013, vol. 70, no. 1, pp. 106–116
- H. Lee, C.-H. Sohn, and J. Park, "Rapid hybrid encoding for high-resolution whole-brain fluid-attenuated imaging," NMR in Biomedicine, 2013, vol. 26, no. 12, pp. 1751–1761

- H.-J. Lee, J. Park, J. Hur, Y. J. Kim, J. E. Nam, B. W. Choi, and K. O. Choe, "The effect of pulmonary blood flow changes on oxygen-enhanced lung magnetic resonance imaging," Magnetic Resonance in Medicine, 2013, vol. 69, no. 6, pp. 1645–1649
- J.-M. Kim, K.-H. Jung, C.-H. Sohn, J. Park, J. Moon, M. H. Han, and J.-K. Roh, "High-resolution MR technique can distinguish moyamoya disease from atherosclerotic occlusion," Neurology, 2013, vol. 80, no. 8, pp. 775–776
- J. Park, J. Kim, E. Yoo, H. Lee, J.-H. Chang, and E. Y. Kim, "Detection of small metastatic brain tumors: comparison of 3D contrast-enhanced whole-brain black-blood imaging and MP-RAGE imaging," Investigative Radiology, 2012, vol. 47, no. 2, pp. 136–141
- S. Park and J. Park, "Adaptive self-calibrating iterative GRAPPA reconstruction," Magnetic Resonance in Medicine, 2012, vol. 67, no. 6, pp. 1721–1729
- H. Lee, E.-Y. Kim, K.-S. Yang, and J. Park, "Susceptibility-resistant variable-flip-angle turbo spin echo imaging for reliable estimation of cortical thickness: A feasibility study," Neuroimage, 2012, vol. 59, no. 1, pp. 377–388
- S.-Y. Zho, J. Park, J.-Y. Choi, and D.-H. Kim, "Respiratory motion compensated MR cholangiopancreatography at 3.0 Tesla," Journal of Magnetic Resonance Imaging, 2010, vol. 32, no. 3, pp. 726–732
- J. Park, S. Park, E. Yeop Kim, and J.-S. Suh, "Phase-sensitive, dual-acquisition, single-slab, 3D, turbo-spin-echo pulse sequence for simultaneous T2-weighted and fluid-attenuated whole-brain imaging," Magnetic Resonance in Medicine, 2010, vol. 63, no. 5, pp. 1422–1430
- J. Park and E. Y. Kim, "Contrast-enhanced, three-dimensional, whole-brain, black-blood imaging: Application to small brain metastases," Magnetic Resonance in Medicine, 2010, vol. 63, no. 3, pp. 553–561
- H. Kim, J. S. Lim, J. Y. Choi, J. Park, Y. E. Chung, M.-J. Kim, E. Choi, N. K. Kim, and K. W. Kim, "Rectal Cancer: Comparison of Accuracy of Local-Regional Staging with Two-and Three-dimensional Preoperative 3-T MR Imaging 1," Radiology, 2010, vol. 254, no. 2, pp. 485–492
- H. Jung, J. Park, J. Yoo, and J. C. Ye, "Radial k-t FOCUSS for high-resolution cardiac cine MRI," Magnetic Resonance in Medicine, 2010, vol. 63, no. 1, pp. 68–78
- J. Hur, J. Park, Y. J. Kim, H.-J. Lee, H. S. Shim, K. O. Choe, and B. W. Choi, "Use of contrast enhancement and high-resolution 3D black-blood MRI to identify inflammation in atherosclerosis," JACC: Cardiovascular Imaging, 2010, vol. 3, no. 11, pp. 1127–1135
- Y. E. Chung, M.-S. Park, M. S. Kim, E. Kim, J. Park, H.-T. Song, J. Y. Choi, M.-J. Kim, and K. W. Kim, "Quantification of superparamagnetic iron oxide-mediated signal intensity change in patients with liver cirrhosis using T2 and T2* mapping: A preliminary report," Journal of Magnetic Resonance Imaging, 2010, vol. 31, no. 6, pp. 1379–1386
- J. Park, J. P. Mugler, and T. Hughes, "Reduction of B1 sensitivity in selective single-slab 3d turbo spin echo imaging with very long echo trains," Magnetic Resonance in Medicine, 2009, vol. 62, no. 4, pp. 1060–1066

- M. Notohamiprodjo, A. Horng, M. F. Pietschmann, P. E. Müller, W. Horger, J. Park, A. Crispin, J. R. G. del Olmo, S. Weckbach, K. A. Herrmann *et al.*, "MRI of the knee at 3T: first clinical results with an isotropic PDfs-weighted 3D-TSE-sequence," Investigative Radiology, 2009, vol. 44, no. 9, pp. 585–597
- P. Lai, A. C. Larson, J. Park, J. C. Carr, and D. Li, "Respiratory self-gated four-dimensional coronary MR angiography: A feasibility study," Magnetic Resonance in Medicine, 2008, vol. 59, no. 6, pp. 1378–1385
- J. Park, J. P. Mugler, W. Horger, and B. Kiefer, "Optimized T1-weighted contrast for single-slab 3D turbo spin-echo imaging with long echo trains: Application to whole-brain imaging," Magnetic Resonance in Medicine, 2007, vol. 58, no. 5, pp. 982–992
- X. Bi, J. Park, V. Deshpande, O. Simonetti, G. Laub, and D. Li, "Reduction of flow- and eddy-currents-induced image artifacts in coronary magnetic resonance angiography using a linear centric-encoding SSFP sequence," Magnetic Resonance Imaging, 2007, vol. 25, no. 8, pp. 1138–1147
- J. Park, A. C. Larson, Q. Zhang, O. Simonetti, and D. Li, "4D radial coronary artery imaging within a single breath-hold: Cine angiography with phase-sensitive fat suppression (CAPS)," Magnetic Resonance in Medicine, 2005, vol. 54, no. 4, pp. 833–840
- J. Park, A. C. Larson, Q. Zhang, O. Simonetti, and D. Li, "High-resolution steady-state free precession coronary magnetic resonance angiography within a breath-hold: Parallel imaging with extended cardiac data acquisition," Magnetic Resonance in Medicine, 2005, vol. 54, no. 5, pp. 1100–1106
- J. Park, Q. Zhang, V. Jellus, O. Simonetti, and D. Li, "Artifact and noise suppression in GRAPPA imaging using improved k-space coil calibration and variable density sampling," Magnetic Resonance in Medicine, 2005, vol. 53, no. 1, pp. 186–193
- X. Bi, J. Park, A. C. Larson, Q. Zhang, O. Simonetti, and D. Li, "Contrast-enhanced 4D radial coronary artery imaging at 3.0 T within a single breath-hold," Magnetic Resonance in Medicine, 2005, vol. 54, no. 2, pp. 470–475
- J. Park, R. McCarthy, and D. Li, "Feasibility and performance of breath-hold 3D true-FISP coronary MRA using self-calibrating parallel acquisition," Magnetic Resonance in Medicine, 2004, vol. 52, no. 1, pp. 7–13
- H. Merte, J. Park, W. W. Shultz, and R. B. Keller, "Criteria for approximating certain microgravity flow boiling characteristics in earth gravity," Annals of the New York Academy of Sciences, 2002, vol. 974, no. 1, pp. 481–503

PATENTS

- J. Park, H. Kim, Non-contrast enhanced magnetic resonance angiography for background and venous suppression, 2017, Republic of Korea
- J. Park, H. Kim, Non-contrast enhanced magnetic resonance angiography for signal enhancement and fat-induced background suppression, 2017, Republic of Korea
- J. Park, E. Lim, Fast spin echo for simultaneous multi-slice imaging, 2017, Republic of Korea

- J. Park, E. Lim, Artifact suppression in mixed band fast spin echo, 2017, Republic of Korea
- J. Park, H. Lee, Extraction of model-based z-spectrum, 2016, Republic of Korea
- J. Park, H. Maeng, Dynamic tagging magnetic resonance imaging, 2016, Republic of Korea
- J. Park, S. Park, Method and apparatus of signal multiplexing magnetic resonance imaging, 2015, Republic of Korea, PCT
- J. Park, E. Lim, Model-based magnetic resonance angiography, 2015, Republic of Korea, PCT
- J. Park, S. Park, Subspace projection based 4D dynamic magnetic resonance angiography, 2015, Republic of Korea, PCT
- J. Park, S. Park, Adaptive dynamic parallel magnetic resonance imaging, 2015, Republic of Korea
- J. Park, S. kim, Non-cartesian chemical exchange saturation transfer imaging, 2015,Republic of Korea
- J. Park, H. Lee, Simultaneous mapping of tissue relaxation and electrical conductivity, 2015, Republic of Korea
- J. Park, S. Park, Method and apparatus for real-time dynamic parallel MRI, 2014, Republic of Korea; DP-2014-0028
- J. Park, H., Lee, Method and apparatus for steady state free precession conductivity mapping, 2014, Republic of Korea/USA, DP-2014-0017
- J. Park, H. Lee, Method and apparatus for ultrafast z-spectrum encoding based magnetic field mapping, 2014, Republic of Korea/USA, DP-2014-0031
- J. Park, S. Park, Method and apparatus for feature-optimized compressed sensing MRI, 2014, Republic of Korea/USA, DP-2014-0036
- J. Park, S. Park, Method and apparatus for magnetic resonance image processing; 2013, Republic of Korea, No. 10-2013-0035579
- J. Park, H. Kim, Method and apparatus of robust magnetic resonance susceptibility imaging; 2013, Republic of Korea; No. 10-2013-0035267
- J. Park, S. Park, multi-coil based composite convolution interpolation using multiple high pass filters and a single low pass filter, 2012, Republic of Korea, No.10-2012-0049779
- J. Park, S. Park, Each coil convolution interpolation using multiple high pass filters and a single low pass filter, 2012, Republic of Korea, No. 10-2012-0049780
- J. Park, S. Park, Method and apparatus of constrained frequency domain reconstruction, 2012, Republic of Korea, No. 10-2012-0039964
- J. Park, H. Lee, Method and apparatus of selective gray matter imaging, 2012, Republic of Korea/USA, No. 10-2012-0035696
- J. Park, H. Lee, Rapid combo acquisition for fluid-attenuated imaging, 2012, Republic of Korea/USA, No. 10-2012-0032492

- J. Park, H. Kim, Method and apparatus of fast and low-energy hybrid magnetic resonance imaging, 2012, Republic of Korea, No. 10-2012-0021249
- J. Park, S. Choi, Method and apparatus of image de-noising for metal artifact correction imaging, 2012, Republic of Korea, No. 10-2012-0006051
- J. Park, S. Park, Method and apparatus of adaptive self-calibrating multi-coil parallel magnetic resonance imaging, 2010, Republic of Korea, No. 10-2010-0088394 (Transfer to Scimedix)
- J. Park, E.Y. Kim, Method and apparatus of highly selective tumor imaging, 2009, Republic of Korea, No. 10-2009-0100894
- J. Park, Method and magnetic resonance system to determine the phase position of magnetization, 2008, Germany/USA/China, No. 10-2008-032-155.9
- J. Park, Turbo spin echo imaging sequence with long echo trains and optimized T1 contrast, 2007, Germany/USA/China, No. 10 2007 021 719.8
- J. Park, Magnetic resonance imaging method and apparatus with phase sensitive fluid suppression, 2008, Germany/USA, 10 2008 046 022.2
- J. Park, Method and magnetic resonance system to excite nuclear spins in a subject, 2008, Germany/USA, No. 10 2008 032 155.9