CURRICULUM VITAE

Sung-Hong Park, PhD

Date of Preparation : 2020. 01. 07

GENERAL INFORMATION

PERSONAL DATA:

Address: Department of Bio and Brain Engineering,
Korea Advanced Institute of Science and Technology (KAIST)
291 Daehak-ro, Yuseong-gu,
Daejeon, South Korea (postal code : 34141)

Phone Number: +82-42-350-4312 (Office), +82-42-350-4352 (Lab.)

Fax Number: +82-42-350-4310

Email Address: sunghongpark@kaist.ac.kr

Homepage: http://mri.kaist.ac.kr

EDUCATION:

Year	Degree	Discipline	Institution/Location
2009	PhD	Bioengineering	University of Pittsburgh, Pittsburgh, PA
1998	MS	Electrical Engineering	Korea Advanced Institute of Science & Technology (KAIST), Daejeon, Korea
1995	BS	Electrical Engineering	Korea Advanced Institute of Science & Technology (KAIST), Daejeon, Korea

ACADEMIC APPOINTMENTS:

2016.09–present	Associate Professor	KAIST, Department of Bio & Brain Engineering Daejeon, South Korea
2012.02–2016.08	Assistant Professor	KAIST, Department of Bio & Brain Engineering Daejeon, South Korea
2010.09–2012.01	Assistant Professor	University of Pittsburgh, Department of Radiology, Pittsburgh, PA, USA
2009.07–2010.08	Assistant Professor (Non-tenure track)	University of Texas Health Science Center Research Imaging Institute, San Antonio, TX
2009.05–2009.06	Postdoctoral Researcher	University of Pittsburgh, Department of Radiology, Pittsburgh, PA, USA

2005.01–2009.04	Graduate Student Researcher	University of Pittsburgh, Department of Bioengineering, Pittsburgh, PA, USA
2003.06–2004.12	Research Fellow	University of Pittsburgh, Department of Neurobiology, Pittsburgh, PA, USA
1996.03–1998.02	Graduate Student Researcher	Korea Advanced Institute of Science and Technology (KAIST), Department of Electrical Engineering, Daejeon, South Korea

NON-ACADEMIC APPOINTMENTS:

2000.05–2003.05	Research Associate	ISOL Technology Inc., Seoul, South Korea
1998.03–2000.04	Research Associate	Medison Co. Ltd., Seoul, South Korea

RESEARCH

EXPERTISE:

Development of MR Imaging Techniques - I have worked on MRI pulse sequence development and image processing / analysis for 20 years in academia and industry. These experiences include technical developments and their clinical / physiological applications for both human and animal researches, with special emphasis on MR imaging of brain vasculature, blood perfusion, chemical exchanges, and their applications to functional and clinical studies including stroke and cancer.

PUBLICATIONS:

SCI(E) Papers (Underscore indicates the corresponding author(s), #: equal contributions)

1. Won-Joon Do, Sunghun Seo, Yoseob Han, Jong Chul Ye, Seung Hong Choi, and **Sung-Hong Park**, Reconstruction of Multi-contrast MR Images through Deep Learning, Medical Physics, 2020, in press.

2. Sunghun Seo, Won-Joon Do, Huan Minh Luu, Ki Hwan Kim, Seung Hong Choi[#], and **Sung-Hong Park**[#], Artificial Neural Network for Slice Encoding for Metal Artifact Correction (SEMAC) MRI. Magnetic Resonance in Medicine, 2020, in press

3. Hyun-Seo Ahn, **Sung-Hong Park**[#], Jong Chul Ye[#], Quantitative Susceptibility Map Reconstruction Using Annihilating Filter-based Low-Rank Hankel Matrix Approach. Magnetic Resonance in Medicine, 2020, 83(3);858-871.

4. Ji Hoon Ahn[#], Hyunsoo Cho[#], Jun-Hee Kim[#], Shin Heun Kim, Je-Seok Ham, Sang Heon Suh, Seon Pyo Hong, Joo-Hye Song, Young-Kwon Hong, Yong Jeong, **Sung-Hong Park**, and Gou Young Koh, Meningeal lymphatic vessels at the skull base drain cerebrospinal fluid, Nature, 2019;572(7767):62-66.

5. Jae-Woong Kim[#], Sul-Li Lee[#], Seung Hong Choi, and **Sung-Hong Park**, Rapid Framework for Quantitative Magnetization Transfer Imaging with Inter-Slice MT and Dictionary-driven Fitting Approaches, Magnetic Resonance in Medicine, 2019;82(5):1671-1683.

6. Muhammad Asaduddin, Won-Joon Do, Eung Yeop Kim, and **Sung-Hong Park**, Mapping Cerebral Perfusion from Time-Resolved Contrast-enhanced MR Angiographic Data, Magnetic Resonance Imaging, 2019;61:143-148.

7. Hyeree Park[#], Joonhyuk Lee[#], **Sung-Hong Park**, and Seung Hong Choi, Evaluation of Tumor Blood Flow Using Alternate Ascending/Descending Directional Navigation in Primary Brain Tumors: A Comparison Study with Dynamic Susceptibility Contrast Magnetic Resonance Imaging, Korean Journal of Radiology, 2019;20(2):275-282 (I.F. = 3.730)

8. Joo Ho Lee, Jeong Eun Lee, Jee Ye Kahng, Se Hoon Kim, Jun Sung Park, Seon Jin Yoon, Ji-Yong Um, Woo Kyeong Kim, June-Koo Lee, Junseong Park, Eui Hyun Kim, Ji-Hyun Lee, Joon-Hyuk Lee, Won-Suk Chung, Young Seok Ju, **Sung-Hong Park**, Jong Hee Chang, Seok-Gu Kang and Jeong Ho Lee, Human glioblastoma arises from subventricular zone cells with low-level driver mutations, Nature, 2018;560(7717):243-247.

9. Ki Hwan Kim, Won-Joon Do, and **Sung-Hong Park**. Improving Resolution of MR Images with an Adversarial Network Incorporating Images with Different Contrast, Medical Physics, 2018;45(7):3120-3131

10. Won-Joon Do, Seung-Hong Choi, and **Sung-Hong Park**. Simultaneous Variable-slab Dual-echo TOF MR Angiography and Susceptibility-Weighted Imaging, IEEE Transactions on Medical Imaging, 2018;37(7):1632-1640

11. Ki Hwan Kim, Seung Hong Choi, and **Sung-Hong Park**. Improving Arterial Spin Labeling using Deep Learning, Radiology, 2018;287(2):658-666

12. Ki Hwan Kim, Hyo-Im Heo, and **Sung-Hong Park**. Detection of Fast Oscillating Magnetic Fields using Dynamic Multiple TR Imaging and Fourier Analysis, PLOS One, 2018;13(1):e0189916,

13. Paul Kyu Han, Seung Hong Choi, and **Sung-Hong Park**. Investigation of Control Scans in Pseudo-Continuous Arterial Spin Labeling (pCASL): Strategies for Improving Sensitivity and Reliability of pCASL, Magnetic Resonance in Medicine, 2017;78(3):917-929

14. Hyun-Soo Lee, Seung Hong Choi, and **Sung-Hong Park**. Single and Double Acquisition Strategies for Compensation of Artifacts from Eddy Current and Transient Oscillation in Balanced Steady-State Free Precession, Magnetic Resonance in Medicine, 2017;78(1):254-263

15. Kyong Hwan Jin, Ji-Yong Um, Dongwook Lee, Juyoung Lee, **Sung-Hong Park** and Jong Chul Ye. MRI artifact correction using sparse + low-rank decomposition of annihilating filter-based Hankel matrix, Magnetic Resonance in Medicine, 2017;78(1):327-340.

16. Jae-Woong Kim, Seong-Gi Kim, and **Sung-Hong Park**. Phase Imaging with Multiple Phase-Cycled Balanced Steady-State Free Precession at 9.4T. NMR in Biomedicine 2017;30(6):e3699.

17. Paul Kyu Han, HyunWook Park, and **Sung-Hong Park**. DC Artifact Correction for Arbitrary Phase-Cycling Sequence. Magnetic Resonance Imaging, 2017;38:21-26

18. Ki Hwan Kim and **Sung-Hong Park**. Artificial Neural Network for Suppression of Banding Artifacts in Balanced Steady-State Free Precession MRI, Magnetic Resonance Imaging, 2017;37:139-146.

19. Ki Hwan Kim, Seung Hong Choi, and **Sung-Hong Park**. Feasibility of quantifying arterial cerebral blood volume using multiphase alternate ascending/descending directional

navigation (ALADDIN), PLOS ONE, 2016; 11(6):e0156687. doi:10.1371/journal.pone.0156687.

20. **Sung-Hong Park**, Won-Joon Do, Seung Hong Choi, Tiejun Zhao, and Kyongtae Ty Bae. Mapping Blood Flow Directionality in the Human Brain. Magnetic Resonance Imaging, 2016;34(6):754-764.

21. Dongwook Lee, Kyong Hwan Jin, Eung-Yeop Kim, **Sung-Hong Park**, and Jong Chul Ye, Acceleration of MR parameter mapping using annihilating filter-based low rank Hankel matrix (ALOHA). Magnetic Resonance in Medicine, 2016;76(6):1848-1864.

22. Paul Kyu Han, Jong Chul Ye, Eung Yeop Kim, Seung Hong Choi, and **Sung-Hong Park**. Whole Brain Perfusion Imaging with Balanced Steady-State Free Precession Arterial Spin Labeling. NMR in Biomedicine 2016;29(3):264-74.

23. Won-Joon Do, Ki Hwan Kim, Seung Hong Choi, and **Sung-Hong Park**. Artifact-suppressed Optimal 3D T1 and T2*-weighted Dual-Echo Imaging. Magnetic Resonance in Medicine, 2016;76(5):1504-1511.

24. Paul Kyu Han, Jeffrey W. Barker, Ki Hwan Kim, Seung Hong Choi, Kyongtae Ty Bae, and **Sung-Hong Park**. Inter-slice Blood Flow and Magnetization Transfer Effects as A New Simultaneous Imaging Strategy, PLOS ONE, 2015, 10(10):e0140560. doi:10.1371/journal.pone.0140560.

25. Jae-Woong Kim, Jiye Choi, Janggeun Cho, Chulhyun Lee, Daejong Jeon, and **Sung-Hong Park**. Preliminary Observations on Sensitivity and Specificity of Magnetization Transfer Asymmetry for Imaging Myelin of Rat Brain at High Field. BioMed Research International, 2015, 2015:565391. doi:10.1155/2015/565391.

26. Paul Kyu Han, **Sung-Hong Park**, Seong-Gi Kim, and Jong Chul Ye. Compressed Sensing for fMRI: Feasibility Study on the Acceleration of Non-EPI fMRI at 9.4T, BioMed Research International, 2015, 2015:131926. doi:10.1155/2015/131926.

27. **Sung-Hong Park**, Paul Kyu Han, and Seung Hong Choi. Physiological and Functional Magnetic Resonance Imaging Using Balanced Steady State Free Precession (bSSFP). Korean J Radiol. 2015;16(3):550-559.

28. Jeffrey W. Barker, Paul Kyu Han, Seung Hong Choi, Kyongtae Ty Bae, and **Sung-Hong Park**, Investigation of Inter-slice Magnetization Transfer Effects as a New Method for MTR Imaging of the Human Brain, Plos One, 2015, 10(2): e0117101. doi:10.1371/journal.pone.0117101

29. **Sung-Hong Park**, Danny J. Wang, Timothy Q. Duong. Balanced Steady State Free Precession for Arterial Spin Labeling MRI: Initial Experience for Blood Flow Mapping in Human Brain, Retina, and Kidney. Magnetic Resonance Imaging, 2013, Sep;31(7):1044-1050

30. Kyongtae Ty Bae, **Sung-Hong Park**, Hackjoon Shim, Chan-Hong Moon, Jung-Hwan Kim, Edwin M. Nemoto. Application of compatible dual-echo arteriovenography (CODEA) in stroke: Preliminary observations. International Journal of Imaging Systems and Technology, 2013;23:152-156

31. **Sung-Hong Park**, Tiejun Zhao, Jung-Hwan Kim, Fernando E. Boada, and Kyongtae Ty Bae. Suppression of effects of gradient imperfections on imaging with alternate ascending/descending directional navigation. Magnetic Resonance in Medicine, 2012, Nov;68(5):1600-1606

32. **Sung-Hong Park**, Tae Kim, Ping Wang, and Seong-Gi Kim. Sensitivity and specificity of high-resolution balanced steady state free precession fMRI at high field of 9.4T. NeuroImage 2011, Sep;58(1):168-176

33. **Sung-Hong Park** and Timothy Q. Duong. Brain MR Perfusion-Weighted Imaging with Alternate Ascending/Descending Directional Navigation. Magnetic Resonance in Medicine, 2011, Jun;65(6):1578-1591.

34. **Sung-Hong Park** and Timothy Q. Duong. Alternate Ascending/Descending Directional Navigation Approach for Imaging Magnetization Transfer Asymmetry. Magnetic Resonance in Medicine, 2011, Jun;65(6):1702-1710.

35. **Sung-Hong Park**, Hackjoon Shim, Chan-Hong Moon, Jung-Hwan Kim, and Kyongtae Ty Bae. Quantitative evaluation of K-space reordering schemes for compatible dual-echo arteriovenography (CODEA). Magnetic Resonance in Medicine, 2010, May;63(5):1404-1410.

36. Kyongtae Ty Bae, **Sung-Hong Park**, Chan-Hong Moon, Jung-Hwan Kim, Diana Kaya, and Tiejun Zhao. Dual-echo arteriovenography imaging at 7 Tesla MR. Journal of Magnetic Resonance Imaging, 2010, Jan;31(1):255-261. (cover paper in January 2010 issue of JMRI)

37. **Sung-Hong Park**, Chan-Hong Moon, and Kyongtae Ty Bae. Compatible Dual-Echo Arteriovenography (CODEA) using an echo-specific K-space reordering scheme. Magnetic Resonance in Medicine, 2009, Apr;61(4):767-774.

38. **Sung-Hong Park**, Kazuto Masamoto, Kristy Hendrich, Iwao Kanno, and Seong-Gi Kim. Imaging brain vasculature with BOLD microscopy: MR detection limits determined by in vivo two-photon microscopy. Magnetic Resonance in Medicine, 2008, Apr;59(4):855-865.

39. Chan-Hong Moon, Mitsuhiro Fukuda, **Sung-Hong Park**, and Seong-Gi Kim. Neural interpretation of blood oxygenation level-dependent fMRI maps at submillimeter columnar resolution. Journal of Neuroscience, 2007, Jun;27(26):6892-6902.

Non-SCI(E) Papers (Underscore indicates the corresponding author(s))

1. Kwan-Jin Jung, Jong-Kwon Lee, Sun-Kyung Kim, and **Sung-Hong Park**. Artifacts due to retrograde flow in the artery and their elimination in 2D TOF MR angiography. Journal of Korean society for magnetic resonance in medicine, 2001;5:38-42.

Book Chapter

1. Seong-Gi Kim and **Sung-Hong Park**. (2011) High-Resolution Venographic BOLD MRI of Animal Brain at 9.4 T: Implications for BOLD fMRI, in Susceptibility Weighted Imaging in MRI: Basic Concepts and Clinical Applications (eds E. M. Haacke and J. R. Reichenbach), John Wiley & Sons, Inc., Hoboken, NJ, USA. doi: 10.1002/9780470905203.ch34 (Print ISBN: 9780470043431, Online ISBN : 9780470905203)

International PATENT Registrations:

Registration Date	**Description**

2014.03.18	An echo-specific K-space reordering approach to compatible dual-echo arteriovenography, US8676296 B2, Inventor(s): **Sung-Hong Park** and Kyongtae Ty Bae (http://www.google.com/patents/US8676296?hl=ko&cl=en)
2018.11.27	Neuronal Resonance Magnetic Resonance Imaging, US10136834 B2 Inventor(s): **Sung-Hong Park** and Kwang Hyun Cho

Domestic PATENT Registrations:

Registration Date	**Description**
2016.11.30	Neuronal Resonance Magnetic Resonance Imaging, 10-1683217 Inventor(s): **Sung-Hong Park** and Kwang Hyun Cho
2018.09.05	Combination of balanced steady-state free precession images for eddy current and transient oscillation compensation, 10-1897608 Inventor(s): **Sung-Hong Park** and Hyun-Soo Lee
2019.04.24	A method for variable-slab MRI data acquisition, 10-1974199 Inventor(s): **Sung-Hong Park** and Won-Joon Do

TEACHING

Classes:

2019.09–2019.12	BiS352 System Modeling in Bioengineering (for 3rd-year undergraduate students), Bio and Brain Engineering, KAIST
2019.07–2019.07	BiS452 Biomedical Imaging (for international 4th-year undergraduate and graduate students), Bio and Brain Engineering, KAIST
2019.03–2019.06	BiS800B Special Lecture in Bio and Brain engineering <Machine Learning for Medical Image Analysis> (for graduate students), Bio and Brain Engineering, KAIST
2018.09–2018.12	BiS352 System Modeling in Bioengineering (for 3rd-year undergraduate students), Bio and Brain Engineering, KAIST
2018.07–2018.07	BiS452 Biomedical Imaging (for international 4th-year undergraduate and graduate students), Bio and Brain Engineering, KAIST
2018.03–2018.06	BiS653 Advanced MRI Techniques (for graduate students), Bio and Brain Engineering, KAIST
2017.09–2017.12	BiS352 System Modeling in Bioengineering (for 3rd-year undergraduate students), Bio and Brain Engineering, KAIST
2017.09–2017.12	BiS452 Biomedical Imaging (for international summer school undergraduate students), Bio and Brain Engineering, KAIST
2016.09–2016.12	BiS352 System Modeling in Bioengineering (for 3rd-year undergraduate students), Bio and Brain Engineering, KAIST

2016.07–2016.07	BiS452 Biomedical Imaging (for international summer school undergraduate students), Bio and Brain Engineering, KAIST
2016.03–2016.06	BiS452 Biomedical Imaging (for 4th-year undergraduate students), Bio and Brain Engineering, KAIST
2015.09–2015.12	BiS352 System Modeling in Bioengineering (for 3rd-year undergraduate students), Bio and Brain Engineering, KAIST
2015.09–2015.12	BiS653 Advanced MRI Techniques (graduate students), Bio and Brain Engineering, KAIST
2015.03–2015.06	BiS452 Biomedical Imaging (for 4th-year undergraduate students), Bio and Brain Engineering, KAIST
2015.03–2015.06	ITC204 Systems Healthcare (for 2nd-year undergraduate students), School of Engineering, KAIST
2014.09–2014.12	BiS452 Biomedical Imaging (for 4th-year undergraduate students), Bio and Brain Engineering, KAIST
2014.03–2014.06	BiS653 Advanced MRI Techniques (for graduate students), Bio and Brain Engineering, KAIST
2014.03–2014.06	BiS200 Bioengineering Fundamentals (for 2rd-year undergraduate students), Bio and Brain Engineering, KAIST
2013.09–2013.12	BiS252 Bio-instrumentation Fundamentals (for 2rd-year undergraduate students), Bio and Brain Engineering, KAIST
2013.03–2013.06	BiS351 Bio-Signal Processing (for 3rd-year undergraduate students), Bio and Brain Engineering, KAIST
2012.09–2012.12	BiS653 Biomedical Imaging System (for graduate students), Bio and Brain Engineering, KAIST
2012.02–2012.05	BiS351 Bio-Signal Processing (for 3rd-year undergraduate students), Bio and Brain Engineering, KAIST
2011.09	Guest Instructor : BIOENG 2505 Multimodal Biomedical Imaging Technologies: MRI Principles (for graduate students), Bioengineering, University of Pittsburgh

Massive Open Online Courses

2018.07–present	MRI Fundamentals, Massive Open Online Class in Coursera for 4th-year undergraduate students and early graduate students. https://class.coursera.org/mrifundamentals-001 (Total learners : 2732)
2015.12–2016.01	MRI Fundamentals, Massive Open Online Class in Coursera for 4th-year undergraduate students and early graduate students. https://class.coursera.org/mrifundamentals-001

MENTORING:

2014.03–Present	Hyun-Soo Lee, PhD student (MS degree), Dept. of Bio and Brain Engineering, KAIST. (Research topic : functional MRI, bSSFP imaging, neuroimaging, fast imaging, etc)
2015.03–Present	Hyo-Im Heo, PhD student (MS degree), Dept. of Bio and Brain Engineering, KAIST (Research topic : arterial spin labeling)
2016.03–Present	Hyun-Sea Ahn, PhD student (MS degree), Dept. of Bio and Brain Engineering, KAIST (Research topic : quantitative susceptibility mapping, arterial spin labeling)
2016.03–Present	Sung-Hoon Seo, PhD student (MS degree), Dept. of Bio and Brain Engineering, KAIST (Research topic : deep learning for MRI)
2017.07–Present	Huan Luu Minh, PhD student (MS degree), Dept. of Bio and Brain Engineering, KAIST (Research topic : deep learning for medical imaging)
2018.03–Present	Jun-Hee Kim, MS student, Dept. of Bio and Brain Engineering, KAIST (Research topic : vascular MRI)
2018.03–Present	Muhammad Asadudin, MS student, Dept. of Bio and Brain Engineering, KAIST (Research topic : perfusion MRI)
2019.03–Present	Seonha Hwang, MS student, Dept. of Bio and Brain Engineering, KAIST (Research topic : TBD)
2019.05–Present	Yujin Jung, MS student, Dept. of Bio and Brain Engineering, KAIST (Research topic : TBD)

Past Lab Members:

2011.07–2012.06	Jeffrey W. Barker, PhD student, Dept. of Bioengineering, Univ. of Pittsburgh. (Software Engineer at Uber)
2012.06–2016.07	Paul Kyu Han, PhD degree, Dept. of Bio and Brain Engineering, KAIST. (Instructor in Gordon Center for Medical Imaging, Massachussetts General Hospital, Harvard Medical School, USA)
2014.03–2018.02	Ki Hwan Kim, PhD degree, Graduate School of Medical Science and Engineering, KAIST. (Medical director in Lunit Inc.)
2013.03–2019.02	Jae-Woong Kim, PhD degree / MS degree, Dept. of Bio and Brain Engineering, KAIST. (Researcher in Samsung Electronics)
2013.09–2019.02	Won-Joon Do, PhD degree / MS degree, Dept. of Bio and Brain Engineering, KAIST. (Researcher in Samsung Electronics)
2014.09–2016.07	SulLi Lee, MS degree, Dept. of Bio and Brain Engineering, KAIST. (Researcher in SK Hynix)
2015.03–2017.02	Ji-Yong Um, MS degree, Dept. of Bio and Brain Engineering, KAIST (Researcher in Viewworks Co Ltd.)
2017.03–2019.02	Je-Seok Ham, MS student, Dept. of Bio and Brain Engineering, KAIST (Researcher in ETRI)
2017.09–2019.07	Dong-Hyun Kim, MS student, Dept. of Bio and Brain Engineering, KAIST (Researcher in ETRI)

SERVICE

REVIEWER:

Years	Conferences or Journals
2013–Present	NMR in Biomedicine
2013–Present	Magnetic Resonance Imaging
2013–Present	Physics in Medicine and Biology
2013–Present	Korean Journal of Radiology
2013–Present	Journal of Korean Society for Magnetic Resonance in Medicine
2012–Present	International Journal of Computer Assisted Radiology and Surgery
2015–Present	Journal of Applied Clinical Medical Physics
2015–Present	Fluids and Barriers of the CNS
2015–Present	Journal of Disease and Global Health
2016–Present	PLOS ONE
2016–Present	Medical Physics
2016–Present	NeuroImage
2016–Present	Magnetic Resonance in Medicine
2016–Present	Scientific Report
2016–Present	Journal of Magnetic Resonance Imaging
2018-Present	IEEE Transactions on Medical Imaging

PROFESSIONAL AFFILIATIONS:

Dates	Organization
2018.04–2020.03	Korean Society of Magnetic Resonance in Medicine

Additional Details: *Scientific Committee Chair*

2016.04–2018.03	Korean Society of Magnetic Resonance in Medicine

Additional Details: *Information and Communication Committee Chair, Publication Committee Member*

2012.02–2016.03	Korean Society of Magnetic Resonance in Medicine

Additional Details: *Education/Academy Committee Member*

2002.01–Present	International Society for Magnetic Resonance in Medicine

Additional Details: *Member and Reviewer*