# *Il Yong Chun*

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**OBJECTIVE**

To seek postdoctoral or full-time scientist position in the medical imaging system engineering, particularly in MRI and X-ray CT

**EDUCATION**

**Purdue University** — West Lafayette, IN, USA
Ph.D. Candidate in Electrical and Computer Engineering — Aug. 2009 – Present
Advisors: Professor Thomas M. Talavage and Professor Ben Adcock

**Korea University** — Seoul, South Korea
B.Eng. in Electrical Engineering — Mar. 2002 – Feb. 2009

**The University of Hong Kong** — Hong Kong, China
Exchange Student in Electrical and Electronic Engineering — Aug. 2007 – May. 2008

**WORK EXPERIENCE**

**Purdue University** — West Lafayette, IN, USA
Research Assistant (advisor: Prof. Thomas M. Talavage) — Aug. 2010 – Present

- Compressed sensing (CS) MRI and X-ray CT
- Multiple-input multiple-output (MIMO) MRI using spatial beam-forming
- Diffusion tensor imaging (DTI) detection of white matter (WM) abnormalities due to accumulated head impacts (longitudinal study)
- Randomization hypothesis test with complete and incomplete pairs
- Fusion imaging between resting state functional MRI (rsfMRI) and DTI
- Development of processing and analysis pipeline for diffusion and susceptibility weighted MR images (DWI and SWI)

Teaching Assistant (advisor: Prof. Michael D. Zoltowski) — Jan. 2011 – May 2011

- Signals and systems (ECE301)

Research Assistant (advisor: Prof. Michael G. Heinz) — Aug. 2011 – May 2013

- Template-based peak detection in auditory signal

**Samsung Advanced Institute of Technology (SAIT)** — Gyeonggi-do, South Korea
Graduate Intern (supervisor: Dr. Jung-Bae Kim) — Jun. 2013 – Jul. 2013

- Multi-modal (ultrasonography – MRI) image registration using multiple mutual information

**Neuroscience Research Institute (NRI)** — Incheon, South Korea
Research Intern and Lecturer (supervisor: Prof. Zang-Hee Cho) — May 2013 – Jun. 2013

- Research: High-resolution positron emission tomography (PET) image reconstruction with sparsity regularization and structural image
- Lecture: An introduction to optimization

**Intel Labs** — Hillsboro, OR, USA
Graduate Intern (supervisor: Dr. Willem M. Beltman) — May 2011 – Jul. 2011

- Real-time frequency-domain blind source separation of convolutive speech mixtures using non-stationarity in mobile environment

**Gangnam-gu and Yeongdeungpo-gu District Office** — Seoul, South Korea
Public Interest Service Personnel — Jun. 2003 – Sep. 2005

- Administrator for the traffic offense vehicle server and regulation system
- Computer engineer

**PUBLICATION**

**Journal Articles**

**Il Yong Chun**, Song Noh, David J. Love, and Thomas M. Talavage, "MIMO SENSE MRI Using Optimal LMMSE Spatial Beam-Forming," submitted to *IEEE Trans. Med. Imag.*, Feb. 2015.

**Il Yong Chun**, Ben Adcock, and Thomas M. Talavage, "Efficient compressed sensing SENSE pMRI reconstruction with joint sparsity promotion," submitted to *IEEE Trans. Med. Imag.*, Oct. 2014.

**Il Yong Chun**, Xianglun Mao, Eric L. Breedlove, Larry J. Leverenz, Eric A. Nauman, and Thomas M. Talavage, "DTI detection of longitudinal WM abnormalities due to accumulated head impacts," submitted to *Dev. Neuropsychol. Sp. Issues Spor. Concuss.*, Jul. 2014.

**Conference Papers**

Sumra Bari, **Il Yong Chun**, Larry J. Leverenz, Eric A. Nauman, and Thomas M. Talavage, "DTI Detection of WM Abnormalities using Randomization Test with Complete and Incomplete Pairs," submitted to *Proc.* $21^{st}$ *Org. for Hum. Brain Mapp. (OHBM)*, Jan. 2015.

Ikbeom Jang, **Il Yong Chun**, Larry J. Leverenz, Eric A. Nauman, and Thomas M. Talavage, "DWI Detection of WM Abnormality and Relation with Collision Events in High School Athletes," submitted to *Proc.* $21^{st}$ *Org. for Hum. Brain Mapp. (OHBM)*, Jan. 2015.

**Il Yong Chun**, Sumra Bari, Larry J. Leverenz, Eric A. Nauman, and Thomas M. Talavage, "Longitudinal White Matter Abnormalities with Different Histories of Sub-Concussive Head Collision," submitted to *Proc.* $23^{rd}$ *Intl. Soc. Mag. Res. Med. (ISMRM)*, Nov. 2014.

Ikbeom Jang, **Il Yong Chun**, Larry J. Leverenz, Eric A. Nauman, and Thomas M. Talavage, "Robust Detection of Axonal Abnormalities in High School Collision-Sport Athletes: Longitudinal Single Subject Analysis," submitted to *Proc.* $23^{rd}$ *Intl. Soc. Mag. Res. Med. (ISMRM)*, Nov. 2014.

**Il Yong Chun**, Ben Adcock, and Thomas M. Talavage, "Efficient compressed sensing SENSE parallel MRI reconstruction with joint sparsity promotion and mutual incoherence enhancement," *Proc.* $36^{th}$ *IEEE Eng. Med. Biol. Soc. (EMBS)*, Chicago, IL, Aug. 2014.

**Il Yong Chun**, Ben Adcock, and Thomas M. Talavage, "Non-convex compressed sensing CT reconstruction based on tensor discrete Fourier slice theorem," *Proc.* $36^{th}$ *IEEE Eng. Med. Biol. Soc. (EMBS)*, Chicago, IL, Aug. 2014.

**Il Yong Chun**, Allan Diaz, Sijia Qiu, Larry J. Leverenz, Eric A. Nauman, and Thomas M. Talavage, "DTI detection of symptomatic and asymptomatic injury due to repetitive hit exposures," $3^{rd}$ *IN Neuroimaging Symp.*, Bloomington, IN, Oct. 2013.

**Il Yong Chun** and Thomas M. Talavage, "Efficient compressed sensing statistical X-ray/CT reconstruction from fewer measurements," *Proc.* $12^{th}$ *Intl. Mtg. on Fully 3D Image Recon. in Rad. and Nuc. Med. (Fully 3D)*, Lake Tahoe, CA, Jun. 2013.

**Il Yong Chun**, Allan Diaz, Xiaodong Li, Yun Jang Jin, Larry J. Leverenz, Eric A. Nauman, and Thomas M. Talavage, "DTI detection of symptomatic and asymptomatic injury due to repetitive head blows," *Proc.* $19^{th}$ *Org. for Hum. Brain Mapp. (OHBM)*, Seattle, WA, Jun. 2013.

**Il Yong Chun** and Thomas M. Talavage, "Fast non-convex statistical compressed sensing MRI reconstruction based on approximated $Lp(0 < p < 1)$-quasi-norm with fewer measurements than using $L1$-norm," *Proc.* $21^{st}$ *Intl. Soc. Mag. Res. Med. (ISMRM)*, Salt Lake City, UT, Apr. 2013.

**Il Yong Chun** and Thomas M. Talavage, "Edge-preserving non-iterative MAP SENSE MRI reconstruction," *Proc.* $21^{st}$ *Intl. Soc. Mag. Res. Med. (ISMRM)*, Salt Lake City, UT, Apr. 2013.

**Il Yong Chun** and Thomas M. Talavage, "Sparse Tikhonov-regularized SENSE MRI reconstruction," *Proc.* $21^{st}$ *Intl. Soc. Mag. Res. Med. (ISMRM)*, Salt Lake City, UT, Apr. 2013.

**Il Yong Chun**, Allan Diaz, Yun Jang Jin, Xiaodong Li, Larry J. Leverenz, Eric A. Nauman, and Thomas M. Talavage, "Robust detection of progressive white matter abnormalities in mTBI using DW-MRI," *Proc.* $21^{st}$ *Intl. Soc. Mag. Res. Med. (ISMRM)*, Salt Lake City, UT, Apr. 2013.

## HONORS AND AWARDS

**Travel Funds for Purdue Engineering Ph.D. Candidates**, Purdue Univ. — Sep. 2014

**Travel Funds**, $12^{\text{th}}$ Fully 3D — Jun. 2013

**Magna Cum Laude Merit Award**, $21^{\text{st}}$ ISMRM — Apr. 2013

**Award of Trainee (Educational) Stipend**, $21^{\text{st}}$ ISMRM — Apr. 2013

**Semester High Honor**, Korea Univ. — Dec. 2005 – Jun. 2007

**Honors Scholarship**, Korea Univ. — Feb. 2006 – Aug. 2007

## ACTIVITIES

**Purdue Electrical Engineering Korean Association (PEEKA)** — Purdue Univ.
Vice President — Aug. 2011 – Aug. 2012

**Academic Society of Communication Engineering** — Korea Univ.
President — Mar. 2006 – Jun. 2007

**VISA STATUS** F-1

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| **MILITARY SERVICE** | Republic of Korea Army<br>Private (Mandatory in South Korea) | Seoul, South Korea<br>Jun. 2003 – Sep. 2005 |

**COMPUTER SKILL** MATLAB, C, and C++