# Jose Daniel Hernandez Chang

# theasdwmove@gmail.com

# EDUCATION

# February 2011- August 2016, Kyung Hee University, South Korea.

- Obtained PhD degree in Biomedical Engineering
- Master and PhD combine program
- Research area in magnetic resonance imaging, MRI.
- Expertise highlights: RF coil design and development, Electro-magnetic simulations of MRI RF coils, Magnetic field monitoring, B<sub>1</sub> shimming and temperature mapping, MRI experiments, basic pulse sequence programming.

## January 2011, Universidad de San Carlos, Guatemala.

- Obtained undergraduate degree in Electronic Engineering
- Major course highlights: Electromagnetism theory, digital design, control systems, information theory and digital signal processing.
- Expertise acquired: Digital and analog circuit design and development, C++ and Matlab programming, micro-controllers programing and digital signal processing.

## **EMPLOYMENT HISTORY**

## March 2019-present, Gachon University, South Korea.

#### Assistant Professor

- Research on multi-frequency RF coil.
- Obtained grand funded by Korea Government.

## March 2018 – 2019, Gachon University, NRI, South Korea.

#### Post-doctor position

- Research on RF coils for VHF MRI system.
- Numerical simulations and analysis.

## October 2016- March 2018, Kyung Hee University, South Korea.

## Post-doctor position

- Work on dental CT, motion artifact correction and beam hardening artifact correction
- Image processing, C++ and Matlab programming.

## From 2012 to 2014, Kyung Hee University – Samsung

Research and project development for Samsung

- Parallel imaging, hardware and software.
- Performed experiments for B<sub>1</sub> shimming.

# June 2008- October 2010, Univesidad de San Carlos, Guatemala.

Teacher assistant for the mathematic department at the Engineering school.

## **COMPETENCIES AND INTERESTS**

**Training:** July 2015, Sim4Life training – MR Implant Safety; February 2015 Sim4Life Training – MRI Application.

**Theses:** Magnetic Field Monitoring System Development and Applications to Correct Field Inhomogeneity Artifacts in MRI.

### **Publications:**

- 1. Correction of B<sub>0</sub> Drift Effects in Magnetic Resonance Thermometry using Magnetic Field Monitoring Technique, Daniel Hernandez, Ki Soo Kim, Eric Michel, Soo Yeol Lee, *Concepts in* Magnetic Resonance Part B: Magnetic Resonance Engineering 46.2 (2016)
- 2. Iterative multi-channel radio frequency pulse calibration with improving B<sub>1</sub> field uniformity in high field MRI, Daniel Hernandez, Min Hyoung Cho Soo Yeol Lee, *BioMedical Engineering OnLine*201514:15
- 3. A Bi-Planar Surface Coil for Parietal Lobe Imaging, Daniel Hernandez, Marlon Perez, Soo Yeol Lee, Proc Intl Soc Mag Reson Med 21:2793
- 4. **Phase drift effect correction for MR Thermometry using magnetic field monitoring,** Daniel Hernandez, Kisoo Kim, Soo Yeol Lee, Proc Intl Soc Mag Resong Med 24:4310
- 5. **Iterative image reconstruction in spectral CT,** Daniel Hernandez; Eric Michel; Hye S. Kim; Jae G. Kim; Byung H. Han; Min H. Cho; Soo Y. Lee, PROCEEDINGS OF SPIE 2012
- 6. **Time-multiplexed two-channel capacitive radiofrequency hyperthermia with nanoparticle mediation,** Ki Soo Kim, Daniel Hernandez, Soo Yeol Lee, BIOMEDICAL ENGINEERING ONLINE 14(1):95
- 7. Electrical conductivity and permittivity maps of brain tissues derived from water content based on T1-weighted acquisition. Michel, E., Hernandez, D. and Lee, S.Y., 2016. *Magnetic resonance in medicine*.
- 8. A Tool Box to Evaluate the Phased Array Coil Performance Using Retrospective 3D Coil Modeling. Marlon Perez, Daniel Hernandez, Eric Michel, Min Hyoung Cho, Soo Yeol Lee. J Korean Soc Magn Reson Med. 2014.
- Retrospective 3D modeling of RF coils using a 3D tracker for EM simulation. Dong Eun Kim, Yong Moon Park, Marlon Perez, Daniel Hernandez, Juhyung Lee, Soo Yeol Lee. Concepts in Magnetic Resonance Part B: Magnetic Resonance Engineering, 2013.
- 10. Denoising of B1+ field maps for noise-robust image reconstruction in electrical properties tomography. Eric Michel, Daniel Hernandez, MH Cho, SY Lee Medical physics, 2014

- Dual-energy-based metal segmentation for metal artifact reduction in dental computed tomography. MAA Hegazy, ME Eldib, Daniel Hernandez, MH Cho, SY Lee - Medical physics, 2018
- 12. A head motion estimation algorithm for motion artifact correction in dental CT imaging. Hernandez, Daniel, et al. Physics in Medicine & Biology, 2018

Spanish Ability: Native

English Ability: Proficient

German Ability: studied from 1998 to 2003, currently basic German language skill.

**Conferences attended: SPIE**, San Diego, California 2012; **ISMR**, Salk Lake city, Utah 2013, Singapore, 2016; **KSMRM**, Seoul, South Korea, 2013, 2014, 2015, 2018.

## Additional work experience:

Basic experience with spectrometer programming (EVO MRI spectrometer, MR Solutions), modifying pulse sequences, and implementing I/O hardware connections.

Developed RF switches, filters, tune and matching circuits.

Monitored the performance of the MRI system, including the cooling system, RF and gradient amplifiers, spectrometers, Tx/Rx Switch and electrical connections.

Developed and implemented a control system for spectral CT detector, using microcontrollers and steppers.

Witnessed the procedure of refilling helium into the MRI system, the ramp down of the magnet strength from 3T to 2.9T, and the change of gradient coils.

Performed in-vivo experiments for brain, body and knee imaging.