

Jonghye (Joshua) Woo

CONTACT INFORMATION

University of Southern California
Department of Electrical Engineering EEB 439
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RESEARCH INTERESTS

Image Processing and Computer Vision application to Medical Image Analysis, especially Cardiac Image Analysis

EDUCATION

University of Southern California, Los Angeles, CA, USA

Ph.D., Electrical Engineering (Signal and Image Processing Institute), December 2009

- Minor: Mathematics
- Advisor: C.-C. Jay Kuo

University of Southern California, Los Angeles, CA, USA

M.S., Electrical Engineering, May 2007

Seoul National University, Seoul, Korea

B.S., Electrical Engineering, March 1998 - August 2005

RESEARCH EXPERIENCE

Department of Imaging and Medicine, Cedars-Sinai Medical Center, Los Angeles, CA, USA

Research Associate

October 2009 - Present

(1) CT-PET image registration, (2) CT Stress-rest change analysis, (3) Cardiac motion analysis

Advisor: Prof. Piotr Slomka

Philips Research North America, Briarcliff Manor, NY, USA

Summer Research Intern

May 2009 - August 2009

3D TEE Registration with Pre-operative MR for Interventional Cardiac Applications

Mentor: Ameet Jain and Vijay Parthasarathy

Cedars-Sinai Medical Center, Los Angeles, CA, USA

Graduate Researcher

January 2008 - May 2009

(1) Multi-modality image registration of Myocardial Perfusion SPECT (MPS) with cardiac CT for better understanding of perfusion defects (2) Serial coronary CTA (CCTA) registration for longitudinal plaque study (3) Segmentation of Left Ventricle on MRI, joint segmentation and registration (Imaging modalities: MRI, CT/CTA, PET/SPECT, and Ultrasound)

Advisor: Prof. Piotr Slomka

SIPI, University of Southern California, Los Angeles, CA, USA

Research Assistant

August 2006 - Dec 2009

Includes Ph.D. research projects and coursework

Advisor: Prof. C.-C. Jay Kuo

Beth Israel Deaconess Medical Center (BIDMC), Harvard Medical School, Boston, MA, USA

Visiting Researcher

August 2006 - December 2006

Multi-modal Data Integration of pre-operative MRI/CT with Electro-Anatomical Data (CARTO)

data) for treatment of fibrillation of left atrium

Network Lab, Seoul National University, Seoul, Korea

Research Student

802.11 Mac layer protocol design

August 2004 - February 2005

TEACHING
EXPERIENCE

Korea Overseas Volunteer (KOICA), Kutai, Indonesia

Instructor

August 2002 - August 2004

Dispatched by Korean Government to serve and help developing country in the spirit of share and respect, as an instructor for computer education (Programming language/Computer Basics) in Kutai Government and University of Kutai

JOURNAL PAPERS

Jonghye Woo, D. Dey, V. Cheng, B.-W. Hong, A. Ramesh, G. Sundaramoorthi, R. Nakazato, C. -C. Jay Kuo, D.S. Berman, G. Germano and P. J. Slomka, "Nonlinear Registration of Serial Coronary CT Angiography (CCTA) for Monitoring Plaque Development", *Medical Physics*, 2009 (tentatively accepted)

Jonghye Woo, P. J. Slomka, D. Dey, V. Cheng, B.-W. Hong, A. Ramesh, D.S. Berman, R.P. Karlsberg, C. -C. Jay Kuo and G. Germano, "Geometric Feature-based Multi-modal Image Registration of Contrast-enhanced Cardiac CT with Gated Myocardial Perfusion SPECT", *Medical Physics*, 36 (12), December, 2009 (in press)

P. J. Slomka, V. Cheng, D. Dey, **J. Woo**, A. Ramesh, S.V. Kriekinge, Y. Suzuki, Y. Elad, R. Karlsberg, D. S. Berman and G. Germano "Combined Quantitative Analysis of Myocardial Perfusion SPECT Co-registered with 64-slice Coronary CT Angiography", *Journal of Nuclear Medicine (JNM)*, 50 (10), pp 1621-30, October, 2009

Jonghye Woo, B.-W. Hong, C. Hu, K. K. Shung, C.-C. Jay Kuo and P.J. Slomka, "Non-rigid Ultrasound Image Registration Based on Intensity and Local Phase Information", *Journal of Signal Processing Systems: Special Issue on Biomedical Imaging*, 54 (1), pp 33-43, January, 2009

Jonghye Woo, B.-W. Hong, S. Kumar, I. B. Ray and C.-C. Jay Kuo, "Multimodal Data Integration for Computer-Aided Ablation of Atrial Fibrillation", *Journal of Biomedicine and Biotechnology (JBB)*, Volume 2008, Hindawi, February, 2008 (invited)

CONFERENCE AND
ABSTRACT

Jonghye Woo, et al. "Automated Registration of Cardiac Stress and Rest CT for Determination of Transient Ischemic Dilation", *IEEE International Symposium on Biomedical Imaging (ISBI)*, 2010 (submitted)

Jonghye Woo, V. Parthasarathy, S. Dalal and A. Jain "3D TEE Registration with Pre-operative MR for Interventional Cardiac Applications", *SPIE Symposium on Medical Imaging: Visualization, Image-Guided Procedures, and Modeling*, San Diego, CA, 2010 (Accepted for publication)

Jonghye Woo, P.J. Slomka, D. Dey, V. Cheng, A. Ramesh, B.-W. Hong, D.S. Berman, C.-C. Jay Kuo, G. Germano, "Automated Multi-modality Registration of 64-slice Coronary CT Angiography with Myocardial Perfusion SPECT", *IEEE International Symposium on Biomedical Imaging (ISBI)*, Boston, MA, June 2009 (Oral Presentation)

Jonghye Woo, P. Slomka, C.-C. Jay Kuo, V. Cheng, D. Dey, D. Berman, G. Germano, "Automated Co-registration of Coronary CT Angiography with Myocardial Perfusion SPECT", *Proc. of Annual Meeting of Society of Nuclear Medicine (SNM)*, Toronto, USA, June 2009

Jonghye Woo, B.-W. Hong, D. Dey, G. Sundaramoorthi, A. Ramesh, G. Germano, V. Cheng, C.-C. Jay Kuo and P. Slomka, "Feature-based Non-rigid Volume Registration of Serial Coronary CT Angiography", *SPIE Symposium on Medical Imaging: Image Processing*, Orlando, Florida, February 2009 (Oral Presentation)

Jonghye Woo, B.-W. Hong, A. Ramesh, G. Germano, C.-C. Jay Kuo and P. Slomka, "Curve Evolution with A Dual Shape Similarity and Its Application to Segmentation of Left Ventricle", *SPIE Symposium on Medical Imaging: Image Processing*, Orlando, Florida, February 2009

Jonghye Woo, B.-W. Hong, S. Kumar, I. B. Ray and C.-C. Jay Kuo, "Joint Reconstruction and Registration Using Level Sets: Application to Computer-aided Ablation of Atrial Fibrillation", *IEEE International Conference Frontiers in the Convergence of Bioscience and Information technologies (FBIT)*, Jeju, Korea, October 2007 (Oral Presentation)

TALK

Jonghye Woo, "3D TEE Registration with Pre-operative MR for Interventional Cardiac Applications", Philips Research North America, Intern Seminar, Aug, 2009

Jonghye Woo, "Automated Multi-modality Registration of Coronary CT Angiography with Myocardial Perfusion SPECT", *IEEE International Symposium on Biomedical Imaging (ISBI)*, Boston, MA, June 2009

Jonghye Woo, "Feature-based Non-rigid Volume Registration of Serial Coronary CT Angiography", *SPIE Symposium on Medical Imaging: Image Processing*, Orlando, Florida, February 2009

Jonghye Woo, "Joint Reconstruction and Registration Using Level Sets: Application to Computer-aided Ablation of Atrial Fibrillation", *IEEE International Conference Frontiers in the Convergence of Bioscience and Information technologies (FBIT)*, Jeju, Korea, October 2007

WORKSHOPS

Advances in nuclear cardiology and cardiac CT: 23rd annual case review with the experts, Cedars-Sinai Medical Center, Los Angeles, CA, USA, January 30 - February 1, 2009

EDUCATIONAL &
WORK EXPERIENCE

Samsung Electronics, Suwon, Korea

Co-Education Program (SNU-Samsung)

Carried out WCDMA System Implementation using C++

January 2005

HONORS AND
AWARDS

Awarded Doctoral Research Fellowship from Cedars-Sinai Medical Center, 2008 - 2009

Awarded Scholarship from Korea Government for Overseas Study, 2005 - 2007

MEMBERSHIP

- Student Member of IEEE
- Student Member of SPIE

SKILLS

- Programming Language: C/C++, Java, Python, Matlab, ITK/VTK, CImg, OpenCV
- Platform and Tools: Windows, Unix/Linux, Visual Studio 8 2005, L^AT_EX,
- Mathematics: Differential Geometry, Level Set, Partial Differential Equation and Numerical Analysis
- Language: English (fluent), Korean (native), Indonesian (fluent), Chinese (beginner)

REFERENCE

Available upon request