Hongki Lim

hongki@umich.edu
https://limhongki.github.io

Education

University of Michigan, Ann Arbor Sep 2015 - Present
PhD Candidate, Electrical Engineering and Computer Science
Advised by Jeffrey Fessler and Yuni Dewaraja

Inha University Feb 2006 - Aug 2012
Bachelor of Science in Electrical Engineering

Research Interest

Quantitative image reconstruction for emission tomography; medical image analysis; inverse problem; convex optimization; machine learning

Journal Papers

[1] **Hongki Lim**, Yuni Dewaraja, Jeffrey Fessler. A PET reconstruction formulation that enforces non-negativity in projection space for bias reduction in Y-90 imaging. *Physics in Medicine & Biology*, 63(3):035042, Feb. 2018.

[2] **Hongki Lim**, Jeffrey Fessler, Scott Wilderman, Allen Brooks and Yuni Dewaraja. Y-90 SPECT maximum likelihood image reconstruction with a new model for tissue-dependent bremsstrahlung production: A proof-of-concept study. *Physics in Medicine & Biology*, ?.2018. To appear.

Conference Proceedings and Abstracts

[1] **Hongki Lim**, Yuni Dewaraja, Jeffrey Fessler. Y-90 SPECT maximum likelihood image reconstruction with a new model for tissue-dependent bremsstrahlung production. *J. Nuc. Med. (Abs. Book)*, 58(s1):746, May 2017. **Oral**

[2] **Hongki Lim**, Yuni Dewaraja. Impact of Tc-99m SPECT reconstruction methods on lung shunt and lesion/normal liver activity quantification in radioembolization. *J. Nuc. Med. (Abs. Book)*, 58(s1):1032, May 2017. **Poster**

[3] **Hongki Lim**, Yuni Dewaraja, Jeffrey Fessler. Reducing bias in Y-90 PET images by enforcing non-negativity in projection space. *Proc. IEEE Nuc. Sci. Symp. Med. Im. Conf.*, 2017. To appear. **Oral**

[4] **Hongki Lim**, Neal Clinthorne, Maurizio Conti, Jeffrey Fessler, Yuni Dewaraja. Quantitative Y-90 PET for dosimetry in radioembolization. *Eur. J. Nuc. Med. Mol. Imaging*, 44(s2):S398, Oct. 2017. **Poster**

[5] **Hongki Lim**, Kyungsang Kim, Quanzheng Li, Jeffrey Fessler, Yuni Dewaraja. Bias reduction in Y-90 PET with reconstruction that relaxes the non-negativity constraint. *J. Nuc. Med. (Abs. Book)*, 2018. To appear. **Oral**

Research and Work Experience

University of Michigan August 2016 - Present
Advised by Prof. Jeffrey Fessler and Prof. Yuni Dewaraja
Medical imaging research, including projects on Y-90 PET and SPECT reconstruction.

University of Michigan May 2016 - August 2016
Advised by Prof. Chenliang Xu
Conducted research on computer vision including projects on LSTM and video understanding.

Qualcomm *Internship* Feb - Jun 2015
Computer Vision Group, Corporate Research & Development
Built datasets and evaluated Snapdragon computer vision engine. Investigated the feasibility of Snapdragon computer vision engine's new features. Analyzed competitors computer vision applications. Wrote one patent draft for internal patent competition.

Samsung Electronics *Associate* Jul 2012 - Mar 2014
Technology Planning Group, Strategic Planning Team, System LSI Division
Established R&D roadmaps of video compression, network on chip and software solutions. Examined the necessity of license/royalty payment when adopting software solutions. Performed competitor analysis on their research areas. Managed technology transfer progress between Samsung Electronics divisions. Prioritized R&D project plans according to necessity, resources and profits

Samsung Electronics *Internship* Dec 2011 - Feb 2012
Technology Planning Group, Strategic Planning Team, System LSI Division
Assisted industry-university collaboration by drafting interim reports. Researched rival companies' manufacturing processes. Assessed Korean minor companies' capability for outsourcing relevant technologies

Korean Air Force *Sergeant* Jul 2009 - Aug 2011
Avionics Maintenance Battalion
Embedded security code for the identification check in aircraft avionic system.

Affiliations

- IEEE, Student Member
- Society of Nuclear Medicine and Molecular Imaging, Associate Member
- European Association of Nuclear Medicine, Junior Member

Relevant Coursework and Skills

Coursework: • Medical Imaging • Nonlinear Programming • Image Processing • Foundations of Computer Vision • Advanced Topics In Computer Vision • Machine Learning • Probability and Random Processes • Matrix Methods for Signal Processing and Machine Learning • Estimation, Filtering, and Detection • Optimization Methods in Statistics
Programming Language: Matlab, Python, C++
English: Scored 102 on TOEFL IBT, 322/3.5 on new GRE

Course Projects

High Dynamic Range Image Tone Mapping Using a Local Edge-Preserving Multiscale Decomposition *Report*
Image Processing, Prof. Jeff Fessler Winter 2016
Proposed the joint base-detail decomposition by considering additional constraints on detail layers.

Image Captioning Using Attention Based Recurrent Neural Networks *Report*
Advanced Topics in Computer Vision, Prof. Jason Corso Winter 2016
Proposed to exploit the spatial transformer network and gated recurrent network for image captioning.

Critiques and Implementation on Recent Image Captioning Methods *Report*
Foundations of Computer Vision, Prof. Jason Corso Fall 2015
Reproduced the method in "Deep visual-semantic alignments for generating image descriptions" published in CVPR 2015.

Awards & Scholarships

Awarded Second Place Prize for Final Project at Image Processing(EECS 556) *Article* Apr 2016
Awarded Scholarship for High Score on TOEIC Fall 2011
Awarded First Place Prize at Control System Design Contest Fall 2008
Awarded Scholarship from School of Logistics Spring 2007
Awarded Semester High Honors Spring, Fall 2006

Extracurricular Activities

Intervarsity Christian Fellowship Sep 2006 - Current
Three times of mission trips to Nanning in China Summer 2006-2008
Soccer, Music Composition Current