Yongwan Lim

Contact Information

3740 McClintock Ave, EEB 414
Los Angeles, CA 90089-2564, USA

213-479-5015
yongwanl@usc.edu

Research Interests

Magnetic Resonance Imaging

- Real-time imaging, compressed sensing, image reconstruction, image deblurring, data and image analysis
- Application of MRI to the study of speech production

Signal and Image Processing

- Inverse problems, pattern recognition, machine learning, structure from motion

Education

University of Southern California (USC), Los Angeles, CA, USA

Ph.D., Electrical Engineering, *Expected:* Fall 2019

- Advisors: Krishna S. Nayak, Ph.D. and Shrikanth S. Narayanan, Ph.D.
- GPA: 3.77/4

Korea Advanced Institute of Science and Technology (KAIST), Daejeon, Korea

M.S., Electrical Engineering, Feb 2014

- Thesis: *Free-breathing Abdominal MR Imaging for Reduction of Respiratory Motion Artifacts*
- Advisor: HyunWook Park, Ph.D.
- GPA: 4.26/4.3

Sogang University, Seoul, Korea

B.S., Electrical Engineering, Feb 2012

- GPA: 3.88/4.3 (Major: 4.19/4.3), *Summa Cum Laude*

Research Experience

Graduate Research Assistant Aug 2015 to present
Magnetic Resonance Engineering Lab and Signal Analysis and Interpretation Lab,
USC, Los Angeles, CA
Advisor: Krishna S. Nayak, Ph.D. and Shrikanth S. Narayanan, Ph.D.

- Operate MRI scanner and collect data ($>$ 50 subjects and 75 hours) for various linguistic studies
- Develop an image deblurring method for spiral real-time MRI
- Develop a three-dimensional real-time MRI technique for speech production study

Research Summer Intern July 2018
Samsung Fire & Marine Insurance, Seoul, Korea

- Develop a deep learning method for document classification

Research Intern June 2014 to June 2015
Image Media Research Center,
Korea Institute of Science and Technology (KIST), Seoul, Korea
Advisor: Jaein Hwang, Ph.D.

- Develop an efficient tracking algorithm in 3D environment for augmented reality system with smartphones

Graduate Research Assistant Feb 2012 to Feb 2014
Image Computing System Lab,
KAIST, Daejeon, Korea

Advisor: HyunWook Park, Ph.D.

- Develop an efficient data acquisition and image reconstruction method for reduction of respiratory motion artifact in abdominal MRI

Undergraduate Research Assistant June 2011 to Jan 2012

Image Processing Lab,
Sogang University, Seoul, Korea
Advisor: Rae-Hong Park, Ph.D.

- Develop a 3D environment reconstruction method using the Kinect sensor

Journal Publications

4. **Y. Lim**, Y. Zhu, S. G. Lingala, D. Byrd, S. Narayanan, and K. S. Nayak, "3D dynamic MRI of the vocal tract during natural speech," *Magnetic Resonance in Medicine*, vol. 81, no. 3, pp. 1511–1520, Mar. 2019.
3. **Y. Lim**, S. G. Lingala, S. Narayanan, and K. S. Nayak, "Dynamic off-resonance correction for spiral real-time MRI of speech," *Magnetic Resonance in Medicine*, vol. 81, no. 1, pp. 234–246, Jan. 2019.
2. S. G. Lingala, Y. Zhu, **Y. Lim**, A. Toutios, Y. Ji, W-C. Lo, N. Seiberlich, S. Narayanan, K. S. Nayak, "Feasibility of spiral through-time GRAPPA for low latency accelerated real-time MRI of speech," *Magnetic Resonance in Medicine*, vol. 78, no. 6, pp. 2275–2282, Dec. 2017.
1. J. S. Choi, H. S. Seo, **Y. W. Lim**, Y. J. Han, and H. W. Park, "Sliding TOF: Sliding time of flight MR angiography using a dynamic image reconstruction method, *Magnetic Resonance in Medicine*, vol. 72, no. 3, pp. 1177–1183, Mar. 2015.

Conference Publications

12. **Y. Lim**, Y. Bliesener, S. Narayanan, and K. S. Nayak, "Calibrationless deblurring of spiral RT-MRI of speech production using convolutional neural networks," *in Proc. 27th Int. Society for Magnetic Resonance in Medicine (ISMRM) Scientific Sessions*, Montreal, Canada, May 2019. (Power pitch presentation)
11. S. G. Lingala, **Y. Lim**, S. Kruger, and K. S. Nayak, "Improved spiral dynamic MRI of vocal tract shaping at 3 Tesla using dynamic off resonance artifact correction," *in Proc. 27th Int. Society for Magnetic Resonance in Medicine (ISMRM) Scientific Sessions*, Montreal, Canada, May 2019. (Oral presentation)
10. S. Sudhakara, **Y. Lim**, W. Chen, S. Narayanan, and K. S. Nayak, "Low-latency reconstruction for real-time speech MRI," *in Proc. 27th Int. Society for Magnetic Resonance in Medicine (ISMRM) Scientific Sessions*, Montreal, Canada, May 2019. (E-poster presentation)
9. **Y. Lim**, Y. Zhu, S. G. Lingala, D. Byrd, S. Narayanan, and K. S. Nayak, "3D real-time MRI of vocal tract shaping," *in Proc. 26th Int. Society for Magnetic Resonance in Medicine (ISMRM) Scientific Sessions*, p. 3541, Paris, France, June 2018. (E-poster presentation)
8. W. Chen, **Y. Lim**, Y. Bliesener, S. Narayanan, and K. S. Nayak, "Comparison of leading reconstruction techniques for real-time speech MRI," *in Proc. 26th Int. Society for Magnetic Resonance in Medicine (ISMRM) Scientific Sessions*, p. 3516, Paris, France, June 2018. (E-poster presentation)
7. **Y. Lim**, S. G. Lingala, S. Narayanan, and K. S. Nayak, "Correction of dynamic off-resonance in spiral 2D real-time MRI of speech," *in Proc. 25th Int. Society for Magnetic Resonance in Medicine (ISMRM) Scientific Sessions*, p. 4017, Honolulu, HI, USA, Apr. 2017. (E-poster presentation)

6. J. Chen, S. G. Lingala, **Y. Lim**, A. Toutios, S. Narayanan, and K. S. Nayak, "Task-based optimization of regularization in highly accelerated speech RT-MRI," *in Proc. 25th Int. Society for Magnetic Resonance in Medicine (ISMRM) Scientific Sessions*, p. 1409, Honolulu, HI, USA, Apr. 2017. (Poster presentation)

5. **Y. Lim**, S. G. Lingala, A. Toutios, S. Narayanan, and K. S. Nayak, "Improved depiction of tissue boundaries in vocal tract real-time MRI using automatic off-resonance correction," *in Proc. Interspeech*, pp. 1765–1769, San Francisco, CA, USA, Sep. 2016. (Poster presentation)

4. S. G. Lingala, A. Toutios, J. Toger, **Y. Lim**, Y. Zhu, Y-C. Kim, C. Vaz, S. Narayanan, and K. S. Nayak, "State of the art MRI protocol for comprehensive assessment of vocal tract structure and function," *in Proc. Interspeech*, pp. 475–479, San Francisco, CA, USA, Sep. 2016. (Oral presentation)

3. J. Toger, **Y. Lim**, S. G. Lingala, S. Narayanan, K. S. Nayak, "Sensitivity of quantitative RT-MRI metrics of vocal tract dynamics to image reconstruction settings,"*In Proc. Interspeech*,pp. 165–169, San Francisco, CA, USA, Sep. 2016.

2. **Y. W. Lim**, Y. J. Han, and H. W. Park, "A robust data acquisition method for reduced respiratory motion artifact in free-breathing image, *In Proc. Int. Society for Magnetic Resonance in Medicine (ISMRM)*, p. 4368, Milan, Italy, Apr. 2014. (E-poster presentation)

1. **Y. W. Lim**, H.-Z. Lee, N.-E. Yang, and R.-H. Park, "3-D reconstruction using the Kinect sensor and its application to a visualization system, *in Proc. 2012 IEEE Int. Conf. Systems, Man, and Cybernetics*, pp. 3343–3348, Seoul, Korea, Oct. 2012. (Oral presentation)

Patent

2. H. W. Park, **Y. W. Lim**, and Y. J. Han, "Magnetic resonance imaging apparatus and control method," Appl. No.: 14/804678, Filed Date: Jul. 21, 2015, U.S. Pub. No.: US 2016/0018497 A1, Pub. Date: Jan. 21, 2016.

1. H. W. Park, **Y. W. Lim**, and Y. J. Han, "Magnetic resonance imaging device and control method thereof, KOREA 10-2014-0091888, Aug. 2014.

Awards

Travel Awards

- ISMRM Educational Stipend Award 2017–2019
- GSG Travel Grant, Graduate Student Government, USC Sep 2016, June 2018

Student Awards

- Korea Government Fellowship 2012–2013
- Best Paper Award, 25th Korea Signal Processing Conference Sep 2012
- Golden Medal Award of the Academic Competition, Sogang University Nov 2011
- IT-Master Fellowship, Korea Telecom Co. 2011
- Top Rank Scholarship, Sogang University 2009–2011

Teaching Experience

Teaching Assistant

- HSS189 - EE Freshmen Seminar, KAIST Spring 2013

Math and Science Teacher Mar 2011 to Dec 2011
High school math and science
Youngnak Borinwon: The sisterhood relationship orphanage, Seoul, Korea

Other Experience	Reviewer
	• ISMRM Annual Conference 2019
	• Precision and Future Medicine 2018
	Military Service
	• Sergeant (Administrative Specialist) Jan 2007 to Jan 2009 The Army of Republic of Korea, Choongju, Korea
Software Skills	Computer Programming:
	• Python, C, C++, Java, UNIX shell scripting, Matlab, LaTeX, and others
Languages	Korean and English