Jongyoo Kim – Curriculum Vitae

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Personal Profile

I received my B.S. degree and the M.S. degree in Electrical and Electronic Engineering from Yonsei University, Seoul, Korea in 2011 and 2013, respectively. I am currently working toward the Ph. D. from 2013. My research interests include 2D/3D image and video processing based on human visual system, perceptual quality assessment of 2D/3D image and video, quality of experience assessment of 2D/3D/VR contents, 3D computer vision and deep learning. I have studied perceptual image quality assessment since 2012, and, since 2015, my major research topic has been adopting deep convolutional neural networks (CNNs) to perceptual image quality assessment and image processing algorithms.

Resaerch Interest

- **Perceptual Image and Video Quality Assessment**
- **Quality of Experience Assessment of 2D/3D/VR Contents**
- **Visual Discomfort Assessment of 3D Stereoscopic and VR Contents**
- **Deep Learning and Convolutional Neural Networks**
- **Human Action Recognition**
- **3D Reconstruction**

Education

2011-Present   Ph.D. in Electrical and Electronic Engineering - Yonsei University, Seoul, Korea
Supervised by Prof. Sanghoon Lee
GPA: 4.03/4.30

2017   Intern - Microsoft Research Asia, Beijing, China
Supervised by Dr. Chong Luo

2007-2011   B.S. in Electrical and Electronic Engineering - Yonsei University, Seoul, Korea
GPA: 3.67/4.30

Journal Publications

1. **J. Kim**, H. Zeng, D. Ghadiyaram, S. Lee, L. Zhang and A. C. Bovik, "Deep convolutional neural models for picture quality prediction," *IEEE Signal Processing Magazine*. (Accepted)

2. **J. Kim** and S. Lee, "Fully deep blind image quality predictor," *IEEE Journal of Selected Topics in Signal Processing*, vol. 11, no. 1, pp. 206–220, 2017.

3. **J. Kim**, T. Kim, S. Lee, and A. C. Bovik, "Quality assessment of perceptual crosstalk on two-view auto-stereoscopic displays," *IEEE Transactions on Image Processing*, 2017. (Accepted)

4. **J. Kim** and S. Lee, "Fully deep blind image quality predictor," *IEEE Journal of Selected Topics in Signal Processing*, vol. 11, no. 1, pp. 206–220, 2017.

5. H. Oh, S. Ahn, **J. Kim**, and S. Lee, "Blind Deep S3D Image Quality Evaluation via Local to Global Feature Aggregation," *IEEE Transactions on Image Processing*. (Accepted)

6. H. Oh, **J. Kim**, J. Kim, T. Kim, S. Lee, and A. C. Bovik, "Enhancement of Visual Comfort and Sense of Presence on Stereoscopic 3D Images," *IEEE Transactions on Image Processing*, vol. 26, no. 8, pp. 3789-3801, Aug. 2017.

7. S.-H. Lee, **J. Kim**, and S. Lee, "An identification framework for print-scan books in a large database," Information Sciences, vol. 396, pp. 33–54, 2017.

8. T. Kim, **J. Kim**, S. Kim, S. Cho, and S. Lee, "Perceptual crosstalk prediction on autostereoscopic 3D display," *IEEE Transactions on Circuits and Systems for Video Technology*, vol. PP, no. 99, pp. 1–1, 2016.

9. H. Kim, **J. Kim**, T. Oh, and S. Lee, "Blind sharpness prediction for ultra-high-definition video based on human visual resolution," *IEEE Transactions on Circuits and Systems for Video Technology*, vol. PP, no. 99, pp. 1–1, 2016.

10. J. Kim, I. Lee, **J. Kim**, and S. Lee, "Implementation of an omnidirectional human motion capture system using multiple kinect sensors," *IEICE Transactions on Fundamentals of Electronics, Communications and Computer Sciences*, vol. 98, no. 9, pp. 2004–2008, 2015.

Submitted Journal Publications

1. **J. Kim** and S. Lee, "Deep CNN-based blind image quality predictor," *IEEE Transactions on Neural Networks and Learning Systems.*

Confernce Proceedings

1. **J. Kim** and S. Lee, "Deep Blind Image Quality Assessment by Employing FR-IQA," in IEEE Conference on Image Processing (ICIP), 2017.

2. **J. Kim** and S. Lee, "Deep learning of human visual sensitivity in image quality assessment framework," in IEEE Conference on Computer Vision and Pattern Recognition (CVPR), 2017.

3. W. Kim, H. Kim, H. Oh, **J. Kim**, and S. Lee, "No-reference perceptual sharpness assessment for ultra-high-definition images," in IEEE International Conference on Image Processing (ICIP), 2016, pp. 86–90.

4. J. Kim, D. Kim, I. Lee, **J. Kim**, H. Oh, and S. Lee, "Human gait prediction method using microsoft kinect," in International Workshop on Advanced Image Technology (IWAIT), 2016.

5. **J. Kim**, J. Kim, W. Kim, J. Lee, and S. Lee, "Video sharpness prediction based on motion blur analysis," in IEEE International Conference on Multimedia and Expo (ICME), 2015, pp. 1–6.

6. B. Kwon et al., "Implementation of human action recognition system using multiple Kinect sensors," in Advances in Multimedia Information Processing – PCM 2015, 2015, pp. 334–343.

7. H. Oh, **J. Kim**, S. Lee, and A. C. Bovik, "3D visual discomfort predictor based on neural activity statistics," in IEEE International Conference on Image Processing (ICIP), 2015, pp. 3560–3564.

8. **J. Kim**, T. Kim, and S. Lee, "Quality assessment of perceptual crosstalk in autostereoscopic display," in IEEE International Conference on Image Processing (ICIP), 2014, pp. 3484–3487.

9. **J. Kim**, K. L. T. Oh, and S. Lee, "Ego motion induced visual discomfort of stereoscopic video," in Asia-Pacific Signal and Information Processing Association Annual Summit and Conference, 2013, pp. 1–4.

10. H. Oh, **J. Kim**, and S. Lee, "Construction of stereoscopic 3D video database," in Global 3D TECH Forum, 2013.

11. **J. Kim** and S. Lee, "Effects on 3D experience by space distortion in stereoscopic video," in Global 3D TECH Forum, 2012.

12. **J. Kim** and S. Lee, "Visual stimuli using 3D graphic software for 3D quality assessment," in International Conference on 3D Systems and Applications (3DSA), 2012.

Tech Reports & Standardization Documents

1. IEEE Standard for Quality of Experience (QoE) and Visual-Comfort Assessments of Three-Dimensional (3D) Contents Based on Psychophysical Studies, in IEEE Std 3333.1.1-2015, 2015.

2. 3DTV Broadcasting Safety Guideline, Telecommunications Technology Association, TTAK.KO-07.0086/R4, 2015

Honors & Awards

- Secretary of the IEEE Human Factors for Visual Experiences WG (P3333.1), 2015 – Present
- Bronze Best Paper Award in IEEE Seoul Section Student Paper Contest, 2016
- Global Ph.D Fellowship, National Research Foundation of Korea, 2011 – 2016
- IEEE IVMSP Workshop 2013 Volunteer Award, IEEE Signal Processing Society, 2013

Project Experience

Apr 2017 - Present
Development of a Method for Regulating Human-factor Parameters for Reducing VR-induced Sickness
Institute for Information & Communications Technology Promotion (IITP)

I developed an algorithm of quality of experience assessment of VR and AR contents based on psychophysical and clinical analysis.

Jan 2017 - Present
Development of GPU Hardware for Real-time and Realistic Virtual Reality
Institute for Information & Communications Technology Promotion (IITP)

I developed a perceptual quality assessment algorithm of GPU-rendered images for VR application.

Jul 2016 - Present
A VR Emotion Study Based on Visual Perception and Artificial Intelligence
National Research Foundation of Korea (NRF)

I developed a convolutional neural network based no-reference image and stereoscopic 3D image quality assessment algorithm.

Jun 2015 - Present
Research on Video Coding Scheme by Predicting Quality Processing
Samsung Electronics

I developed a video quality assessment algorithm to enhance the video coding scheme.

Apr 2014 - Feb 2017
Research on Human Safety and Contents Quality Assessment for Realistic Broadcasting
Institute for Information & Communications Technology Promotion (IITP)

I developed a visual discomfort prediction method of 3D stereoscopic images and videos.

May 2013 - Feb 2017
Development of ODM-interactive Software Technology supporting Live-Virtual Soldier Exercises
Institute for Information & Communications Technology Promotion (IITP)

I developed a real-time human pose estimation system where six Microsoft Kinects and omni-directional treadmill are used.

Mar 2015 - Feb 2016
Identification and Copy Protection Technology of Book-scanned Text/Comic Books
Korea Copyright Commission

I developed an efficient algorithm for searching and matching an input comic book from a database.

Mar 2015 - Feb 2016
Research on Feature Extraction and DB Construction for Image-based Indoor Localization
Electronics and Telecommunications Research Institute (ETRI)

I developed a SLAM algorithm using stereoscopic video streams.

Feb 2012 - Apr 2014
Implementation of Automatic Measure For 3D Quality Enhancement
Samsung Electronics

I developed a quality measuring model considering display geometry to find optimal enhancement degree.

Software Engineering Skills

- **Programming Languages**

  C, C++, Java, Mathematica, Matlab, Python, LaTeX

- **Framework**

  Theano, TensorFlow, Android SDK/NDK, NumPy, OpenCV

References

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