

Personal Information

- Born : May 12, 1983, in Daegu, South Korea.
- Address : LG-Hall 2106, KAIST, 373-1 Guseong-dong, Yuseong-gu, Daejeon 305-701 South Korea.
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Education

- B.S. (*magna cum laude*, GPA 3.84/4.3) in Electrical Engineering, Korea Advanced Institute of Science and Technology (KAIST), Aug. 2004.
- Ph.D. (GPA 3.82/4.3) in Electrical Engineering, Korea Advanced Institute of Science and Technology (KAIST), Aug. 2011.
- Post Doc. in Electrical Engineering, Korea Advanced Institute of Science and Technology (KAIST), Sep. 2011 ~ Present.
- Research internship at National ICT Australia (NICTA), working on structured support vector machine for signal processing supervised by Dr. Alexander J. Smola, April 2008 ~ July 2008.
- Research internship at Microsoft Research (MSR) Cambridge, working on image segmentation supervised by Dr. Pushmeet Kohli and Dr. Sebastian Nowozin, April 2010 ~ May 2010.

Research Area

- Machine Learning for Multimedia Signal Processing, Discriminative Training, Graphical Modeling, Support Vector Machine, Boosting.

Dissertation

- Ph.D.: "Task-specific Image Partitioning based on Discriminative Higher-Order Correlation Clustering," Department of EE, Korea Advanced Institute of Science and Technology (KAIST), Aug., 2011.

Project Experiences

- Development of the copyright protection system for multimedia data based on the detection of semantically coherent contents (Mar. 2009 ~ Present).
- Development of a speech based interface for human robot interaction (May 2009 ~ Present).
- Multimedia retrieval system based on the detection of semantically coherent contents (Mar. 2009 ~ Present).
- Development of the image contents annotation, search and retrieval system. (Dec. 2009 ~ June 2010).
- Development of feature extraction and indexing for content-based video identification (July 2008 ~ June 2010).
- Speaker recognition system (Sep. 2008 ~ Feb. 2009).
- Development of the speech and music based human emotion recognition system for intelligent robotics (Apr. 2007 ~ Mar. 2008).
- Speech recognizer on the embedded linux system for wearable ubiquitous computer (Mar. 2007 ~ Feb. 2008).
- Audio fingerprinting system for copyright projection (May 2005 ~ Nov. 2006).

Skills

- C/C++, MATLAB, Windows programming, R programming, Digital signal processing

Papers

- **Sungwoong Kim**, Sebastian Nowozin, Pushmeet Kohli, and Chang D. Yoo, “Higher-Order Correlation Clustering for Image Segmentation,” submitted to IEEE Transaction on Pattern Analysis and Machine Intelligence.
- **Sungwoong Kim**, Sebastian Nowozin, Pushmeet Kohli, and Chang D. Yoo, “Task-Specific Image Partitioning,” submitted to IEEE Transaction on Image Processing.
- **Sungwoong Kim**, Sebastian Nowozin, Pushmeet Kohli, and Chang D. Yoo, “Higher-Order Correlation Clustering for Image Segmentation,” in *Proc. Neural Information Processing Systems*, Granada, Spain, Dec. 2011.
- **Sungwoong Kim**, Sungrack Yun, and Chang D. Yoo, “Large Margin Discriminative Semi-Markov Model for Phonetic Recognition,” in *IEEE Transaction on Audio, Speech, and Language Processing*, vol. 19, no. 7, pp. 1999-2012, Sep. 2011.
- **Sungwoong Kim**, Jongmin Kim, Sungrack Yun, and Chang D. Yoo, “Nu-Structured Support Vector Machines,” in *Proc. IEEE International Workshop on Machine Learning for Signal Processing (MLSP)*, Kittila, Finland, pp. 450-455, Aug. 2010.
- O. Thomas, P. Sunehag, G. Dror, Sungrack Yun, **Sungwoong Kim**, M. Robards, A. Smola, D. Greene, and P. Saunders, “Wearable-Sensor Activity Analysis Using Semi-Markov Models with a Grammar,” in *Pervasive and Mobile Computing*, Elsevier, vol. 6, no. 3, pp. 342-350, 2010.
- **Sungwoong Kim**, Sungrack Yun, and Chang D. Yoo, “Large Margin Training of Semi-Markov Model for Phonetic Recognition,” in *Proc. IEEE International Conference on Acoustics, Speech, and Signal Processing (ICASSP)*, Dallas, USA, pp. 1910-1913, Mar. 2010.
- Dalwon Jang, Chang D. Yoo, Sunil Lee, **Sungwoong Kim**, and Ton Kalker, “Pairwise Boosted Audio Fingerprint,” in *IEEE Trans. Information Forensics and Security*, vol. 4, no. 4, pp. 995-1004, December 2009.
- **Sungwoong Kim**, Sungrack Yun, and Chang D. Yoo, “Margin-Enhanced Maximum Mutual Information Estimation for Hidden Markov Models,” in *Proc. IEEE International Symposium on Industrial Electronics (ISIE)*, Seoul, Korea, pp. 1347-1351, July 2009.
- **Sungwoong Kim** and Chang D. Yoo, “Boosted Binary Audio Fingerprint Based on Spectral Subband Moments,” in *Proc. IEEE International Conference on Acoustics, Speech, and Signal Processing (ICASSP)*, Honolulu, USA, pp. 241-244, April 2007.

Patents

- Chang D. Yoo, **Sungwoong Kim**, Sanghyuk Park, Image Partitioning Method Using High-Order Correlation Clustering, System Processing The Method and Recording Medium, 10-2012-0006668, (Republic of Korea), 2012, pending.
- Chang D. Yoo, **Sungwoong Kim**, Sanghyuk Park, Image Partitioning Method Using Correlation Clustering, System Processing The Method and Recording Medium, 10-2012-0006669, (Republic of Korea), 2012, pending.
- Chang D. Yoo, **Sungwoong Kim**, Continuous Phoneme Recognition Method Using Semi-Markov Model, System Processing The Method and Recording Medium, 10-2012-0006898, (Republic of Korea), 2012, pending.
- Chang D. Yoo, Sanghyuk Park, Sungrack Yun, **Sungwoong Kim**, Advanced Driver Assistance System for Safety Driving Using Driver Adaptive Irregular Behavior Detection and Method thereof, 10-2011-0078637, (Republic of Korea), 2011, pending.
- Chang D. Yoo, Sanghyuk Park, Sungrack Yun, **Sungwoong Kim**, Augmented Reality System for Head-Up Display, 10-2011-0073883, (Republic of Korea), 2011, pending.
- Chang D. Yoo, Sanghyuk Park, **Sungwoong Kim**, Face Detection System and Method Using Skin Color Filtering and Morphology Processing, 10-2010-0061396, (Republic of Korea), 2010, pending.

Honors

- Government Scholarship (both Undergraduate and Graduate)
- 16th Samsung Humantech Thesis Prize, Bronze, 2010.

Activities

- Member of IEEE.
- Reviewer of IEEE Transactions on Audio, Speech, and Language Processing.
- Reviewer of IEEE Signal Processing Letters.
- Tutorial: Machine Learning Tutorial, Korea, Feb., 2012.