

Sungwoong Kim

Research Scientist

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Education

B.S. Electrical Engineering, Korea Advanced Institute of Science and Technology, Aug, 2004.

Ph.D. Electrical Engineering, Korea Advanced Institute of Science and Technology, Aug, 2011.

Research Intenship, National ICT Australia (NICTA), supervised by Dr. Alexander J. Smola, April 2008 – July 2008.

Research Intenship, Microsoft Research (MSR) Cambridge, supervised by Dr. Pushmeet Kohli and Dr. Sebastian Nowozin, April 2010 – May 2010.

Employment

Post Doc., Korea Advanced Institute of Science and Technology, Sep. 2011 – Mar. 2012.

Staff Engineer, Qualcomm Research Korea, Mar. 2012 – Aug. 2017.

Research Scientist, Kakao Brain, Sep. 2017 – Present.

Research Area

Machine Learning, Graphical Modeling, Deep Learning, Meta Learning, Optimization, Multimedia Signal Processing.

Ph.D. Dissertation

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

Project Experiences

Meta Learning (Sep 2017 – Present).

Development of the on-device learning system for smart IoT (May 2016 – Aug. 2017).

Development of the text recognition system for hand-held devices (Jan. 2014 – Apr. 2016).

Development of the voice wakeup system for hand-held devices (Mar. 2012 – Dec. 2013).

Development of the copyright protection system for multimedia data based on the detection of semantically coherent contents (Mar. 2009 – Aug. 2011).

Development of a speech based interface for human robot interaction (May 2009 – Aug. 2011).

Multimedia retrieval system based on the detection of semantically coherent contents (Mar. 2009 – Aug. 2011).

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).

Publications

Journal Articles

Jorg H. Kappes, Bjoern Andres, Fred A. Hamprecht, Christoph Schnorr, Sebastian Nowozin, Dhruv Batra, **Sungwoong Kim**, Bernhard X. Kausler, Thorben Kroger, Jan Lellmann, Nikos Komodakis, Bogdan Savchynskyy, and Carsten Rother, "A Comparative Study of Modern Inference Techniques for Structured Discrete Energy Minimization Problems", *International Journal of Computer Vision*, vol. 115, no. 2, pp. 155–184, Nov. 2015.

Sungwoong Kim, Chang D. Yoo, Sebastian Nowozin, and Pushmeet Kohli, "Image Segmentation Using Higher-Order Correlation Clustering", *IEEE Transaction on Pattern Analysis and Machine Intelligence*, vol. 36, no. 9, pp. 1761–1774, Sep. 2014.

Sungwoong Kim, Sebastian Nowozin, Pushmeet Kohli, and Chang D. Yoo, "Task-Specific Image Partitioning", *IEEE Transaction on Image Processing*, vol. 22, no. 2, pp. 488–500, Feb. 2013.

Sungwoong Kim, Sungrack Yun, and Chang D. Yoo, "Large Margin Discriminative Semi-Markov Model for Phonetic Recognition", *IEEE Transaction on Audio, Speech, and Language Processing*, vol. 19, no. 7, pp. 1999–2012, Sep. 2011.

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", *Pervasive and Mobile Computing*, vol. 6, no. 3, pp. 342–350, June. 2010.

Dalwon Jang, Chang D. Yoo, Sunil Lee, **Sungwoong Kim**, and Ton Kalker, "Pairwise Boosted Audio Fingerprint", *IEEE Transaction on Information Forensics and Security*, vol. 4, no. 4, pp. 995–1004, Dec. 2009.

Proceedings

Taesup Kim, Jaesik Yoon, Ousmane Dia, **Sungwoong Kim**, Yoshua Bengio, Sungjin Ahn, "Bayesian Model-Agnostic Meta-Learning", arXiv preprint arXiv:1806.03836, 2018.

Jorg H. Kappes, Bjoern Andres, Fred A. Hamprecht, Christoph Schnorr, Sebastian Nowozin, Dhruv Batra, **Sungwoong Kim**, Bernhard X. Kausler, Jan Lellmann, Nikos Komodakis, and Carsten Rother, "A Comparative Study of Modern Inference Techniques for Discrete Energy Minimization Problems", in *Proc. IEEE International Conference on Computer Vision and Pattern Recognition (CVPR)*, Portland, USA, June. 2013.

Sungwoong Kim, Sebastian Nowozin, Pushmeet Kohli, and Chang D. Yoo, "Higher-Order Correlation Clustering for Image Segmentation", in *Proc. Neural Information Processing Systems (NIPS)*, Granada, Spain, Dec. 2011.

Sungwoong Kim, Jongmin Kim, Sungrack Yun, and Chang D. Yoo, " ν -Structured Support Vector Machines", in *Proc. IEEE International Workshop on Machine Learning for Signal Processing (MLSP)*, Kittila, Finland, pp. 450–455, Aug. 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.

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 Sub-band 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, Image Segmentation Method Using Higher-Order Clustering, System for Processing the Same and Recording Medium for Storing the Same, 9,111,356, (US), 2015.

Chang D. Yoo, Sungwoong Kim, Sanghyuk Park, Image Partitioning Method Using High-Order Correlation Clustering, System Processing The Method and Recording Medium, 10-1348904, (Republic of Korea), 2013.

Chang D. Yoo, Sungwoong Kim, Sanghyuk Park, Image Partitioning Method Using Correlation Clustering, System Processing The Method and Recording Medium, 10-1356629, (Republic of Korea), 2014.

Chang D. Yoo, Sungwoong Kim, Continuous Phoneme Recognition Method Using Semi-Markov Model, System Processing The Method and Recording Medium, 10-1359689, (Republic of Korea), 2014.

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, 10-1276770, (Republic of Korea), 2013.

Chang D. Yoo, Sanghyuk Park, Sungrack Yun, Sungwoong Kim, Augmented Reality System for Head-Up Display, 10-1359660, (Republic of Korea), 2014.

Chang D. Yoo, Sanghyuk Park, Sungwoong Kim, Face Detection System and Method Using Skin Color Filtering and Morphology Processing, 10-1143555, (Republic of Korea), 2012.

Honors

Government Scholarship (both Undergraduate and Graduate).

16th Samsung Humantech Thesis Prize, Bronze, 2010.

Activities

Member of IEEE.

Reviewer of IEEE Transactions on Pattern Analysis and Machine Intelligence.

Reviewer of IEEE Transactions on Image Processing.

Reviewer of IEEE Transactions on Audio, Speech, and Language Processing.

Reviewer of IEEE Signal Processing Letters.

Reviewer of several conferences such as ICML, CVPR, etc.

Tutorial: Machine Learning Tutorial, Korea, Feb. 2012, Jan. 2013, Jan. 2014, Jan. 2015.

Conducting a lot of lectures with regard to machine learning.

Last updated: July 30, 2018