Suyoun Kim

980 Kiely Blvd, Apt 205, Santa Clara, California 95051, USA

suyoun@cmu.edu ● +1 (412) 692-0503 ● http://www.suyoun.kim

EDUCATION	**Carnegie Mellon University**	Aug 2014 – Present

Carnegie Mellon University — Aug 2014 – Present
Ph.D. in Electrical and Computer Engineering
Speech Recognition, Deep Learning, Machine Learning
Advisers: Professors Richard M. Stern and Ian Lane

Carnegie Mellon University — Aug 2012 – Aug 2014
M.S. in Computer Science (Language Technologies Institute)
Research areas: Machine Learning, Computational Biology

Georgia Institute of Technology — Jan 2010 – May 2011
M.S. in Computer Science; Dual degree with Korea University

Konkuk University — Mar 2001 – Feb 2005
B.S. in Multimedia

RESEARCH EXPERIENCE

Carnegie Mellon University, Graduate Research Assistant — Aug 2012 – Present

1) Proposed an **attention based RNN acoustic model** that directly combines multi-channel audio to generate phonetic states without requiring any prior knoweldge of the microphone or any explicit signal preprocessing. Embedded an **attention mechanism** within acoustic model to automatically tune its attention to a more reliable input source. Achieved a relative improvement in WER of 17% on a subset of the CHiME-3 challenge task.

2) Proposed a noise robust DNN acoustic model that incorporates background **noise context features learned from deep bottleneck network**. Achieved a relative improvement in WER of 0.41% in the mismatched condition.

3) Proposed a **multimodal deep learning framework** that can transfer knowledge obtained from a single-modal DNN to a different modality, and developed a model that learns the **analogy-preserving embeddings** between audio and video representation. Evaluated on a lip-reading task, and achieved an improvement in accuracy of 3.85%.

4) Proposed a novel **spectrogram compression** technique for an automatic lyric recognition system. Evaluated on 50 hours of commercial songs and achieved a relative improvement in accuracy of 62.20%.

5) Developed the **transfer learning** model to overcome the scarcity of labeled data in human protein-protein interaction prediction by transferring generic features across species.

PUBLICATIONS

1) Suyoun Kim, and Ian Lane, "Recurrent Models for Auditory Attention in Multi-Microphone Distance Speech Recognition," *(Submitted to ICLR)*.
2) Seungwhan Moon, Suyoun Kim, and Haohan Wang, "Multimodal Transfer Deep Learning with an Application in Audio-Visual Recognition," *(MMML Workshop at NIPS, 2015)*.
3) Dae Hyun Kim, Suyoun Kim, and Sung Kyu Lim, "Impact of nano-scale through-silicon vias on the quality of today and future 3D IC designs," in *Proceedings of the System Level Interconnect Prediction Workshop. IEEE Press*, 2011.

WORK EXPERIENCE

Samsung Electronics Co., Ltd., Suwon, South Korea — Jan 2005 – Jul 2012
Software Engineer, Visual Display Division
Developed Internet Protocol Set-top Box software based on Embedded Linux system.
Participated in an Academic Training Program (about 100 out of 100,000 employees are sponsored to attend graduate school).

Samsung Software Membership, Seoul, South Korea — Jan 2004 – Jan 2005
Intern, Internship program sponsored by Samsung Electronics.
Developed 3D mobile game.

SKILLS

C/C++, JAVA, Python, MATLAB, LaTeX