Se-Min Lim

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Education

Mar 2017 – Feb 2019   **Master's Degree**, *Korea University*, Seoul, S. Korea.
GPA - 4.38/4.50 | Major: Electronics and Information Engineering

Mar 2011 – Feb 2017   **Bachelor's Degree**, *Korea University*, Seoul, S. Korea.
GPA - 3.50/4.50 | Major: Electronics and Information Engineering

Research Interest

Artificial Intelligence

○ Neural networks, computational neuroscience, machine & deep learning applications

○ Human visual perception, computer vision, human motion recognition, motion similarity evaluation, neural networks based coaching assistant system, data analysis

Computer Architecture

○ FPGA based accelerator for neural networks, low-cost and speed-up method for calculation module

Professional Experience

Feb 2019 – Current   **Researcher**, *Korea University Research & Business Foundation*, Seoul, S. Korea.

1) Low-cost Method for Recognizing Table Tennis Activity

○ Implemented cosine similarity based FPGA hardware accelerator for recognizing table tennis activity focused on low-cost and speed-up

2) Activity Recognition from Early-stage Motion

○ Implemented LSTM RNN based new neural networks for recognizing early-stage motions of table tennis activity

Mar 2017 – Feb 2019   **Research Assistant**, *Parallel Computation & VLSI Architecture Lab*, Korea University, Seoul, S. Korea.

1) Deep Learning-Based Assistive System for Table Tennis Practice

○ Designed the systems based on LSTM RNN to inference table tennis's specific posture of a specific player

2) LSTM-Guided Coaching Assistant for Table Tennis Practice

○ Constituted a deep space state model and compared two players' low-dimensional latent trajectories through probabilistic inference

3) Low-cost Assistive System for Table Tennis Practice

○ Implemented FPGA based hardware accelerators based on deep learning and cosine similarity inference systems and compared two accelerators

4) Pipelined squarer for unsigned integers of up to 16 bits

○ Applied the pipelining technique to the implementation of squarer and use CSA(Carry-Save Adder) tree and ripple-carry method either

Mar 2015 – **Undergraduate Researcher**, *Parallel Computation & VLSI Architecture Lab*, Feb 2017 Korea University, Seoul, S. Korea.

1) Raspberry Pi 2 Model B-Based CAN Bus Driver

○ Implemented Raspbian based CAN(Controller Area Network) bus protocol driver

2) Kinect Camera-Based Forward Head Posture Correction Device

○ Implemented a portable embedded device that detection of forward head posture and linked the device with Android application

3) Deep Learning-Based Real-time People and Objects Recognition System for Blind People

○ Implemented YOLO CNN based real-time recognition system using NVIDIA TX 1

Mar 2017 – **Teaching Assistant**, *Korea University*, Sejong, S. Korea.
Dec 2018

○ Electronic Circuits II, Signals and System I, Electric Circuits II, Pre-Calculus, Calculus

○ Introduction to Applied Mathematics, Digital System Laboratory, Discrete Mathematics, Computer Architecture

Publication

[J1] **Se-Min. Lim**, Jooyoung Park, and Hyeong-Cheol Oh, "Low-cost Method for Recognizing Table Tennis Activity", *IEICE Trans. on Information and Systems*, Vol.E102-D, No.10, pp.-, Oct. 2019.

[J2] **Se-Min. Lim**, Hyeong-Cheol Oh, Jaein Kim, Juwon Lee, and Jooyoung Park, "LSTM-Guided Coaching Assistant for Table Tennis Practice", *MDPI Sensors*, 2018, 18(12), 4112-4126, DOI: 10.3390/s18124112.

[C1] Keon-Woo Kim, **Se-Min Lim**, Jooyoung Park, In-Kyeong Ann and Hyeong-Cheol Oh "Activity Recognition from Early-stage Motion", *KCC 2019: Korea Computer Congress 2019*, KIISE, Jeju, Korea (June 26–28, 2019)

[C2] **Se-Min Lim**, Keon-Woo Kim, Jong-Wun Yang, Jooyoung Park, and Hyeong-Cheol Oh "Low Cost Assistive System for Table Tennis Practice", *KCC 2018: Korea Computer Congress 2018*, KIISE, Jeju, Korea (June 20–22, 2018)

[C3] **Se-Min Lim**, Jong-Wun Yang, Jooyoung Park, and Hyeong-Cheol Oh, "Deep Learning based Assistive System for Table Tennis Practice", *KSC 2017: Korea Software Congress 2017*, KIISE, Busan, Korea (December 20–22, 2017)

[T1] **Se-Min Lim**, "AI-Based Coaching System Asistant System for Sports Practice", *Master Thesis*, Korea University, Feb. 2019

Patents

[1] **Se-Min Lim**, Seongjin Choi, and Hyeong-Cheol Oh, "Pipelined squarer for unsigned integers of up to 16 bits", KR101974779, filed Apr. 25, 2019

Awards and Fellowships

Awards

Jun 2018 **Best Poster Award**, *Korea Computer Congress 2018*.
Korean Institute of Information Scientists and Engineers

Sep 2016 **Best Research of Undergraduate Student Award**, *Department of Electronic and Eletrical Engineering Congress 2016.*
Korea University

Fellowships

Mar 2017 – Feb 2019 **Fellowships of Research & Teaching Assistant**, *Korea University.*

Jun 2015 – Dec 2016 **National Grant**, *Korea Student Aid Foundation.*

Sep 2016 **Scholarship for Undergraduate Researcher**, *Korea University.*

Dec 2015 **Scholarship of Korea University Alumni Association**, *Korea University.*

Skills

Computer Language Skills

○ C/C++, Window/Linux Programming, Python, Verilog, VHDL, MATLAB

Software Skills

○ Visual Studio, PyCharm, iPython Notebook, Jupyter, Spider, Quartus Prime, Viviado, ISE WebPack, Multisim, Microsoft Office