EUGENE LEE

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EDUCATION

National Chiao Tung University, Hsinchu *August 2017 - Present*
Ph.D. in Electronics Engineering
Institute of Electronics
Advisor: Chen-Yi Lee

National Chiao Tung University, Hsinchu *August 2013 - June 2017*
Bachelor of Science, Electronics Engineering

RESEARCH INTEREST

Focusing in machine learning approaches suited for self-supervised or autonomous learning. Works mainly on causal learning, meta-learning, self-supervised learning and neural architecture search. Interested in how the brain works and its connection to existing machine learning algorithms.

PROJECTS

Foveated Video Super-Resolution
Application of Video Super-Resolution (VSR) for the rending of foveated frames to meet the constraint of bandwidth-constrained wireless systems.

Autonomous Learning
Incorporates self-supervised learning and meta-learning techniques to enable deep models to learn autonomously. Takes learning efficiency and biological plausibility into account during formulation.

Non-Invasive Blood Glucose Level Estimation
With the inconvenience of current methodology of blood glucose level measurement, this project aims to estimate blood glucose level through the extraction of biomarkers from photoplethysmogram.

Remote Heart Rate Estimation
Commonly used methodology in heart rate estimation requires close contact with the human skin, e.g. electrocardiogram and photoplethysmogram. This project uses a video camera to capture the face of a subject as a signal source for heart rate estimation, hence heart rate estimation can be done remotely.

TECHNICAL STRENGTHS

Modeling and Analysis	PyTorch, Tensorflow
Software & Tools	Python, C/C++, MATLAB, Dart, Verilog, Java

WORK EXPERIENCE

Crystal Lake, Hsinchu August 2018 - August 2019
Data Analyst, Side Project

· Improve the overall performance, e.g. data access, power, lifespan of Solid State Drive (SSD) through the design of a machine learning model for its data controller.

OneWork, Taipei May 2019
Data Engineer, Side Project

· Design of hazard (smoke, fire) detection system using deep learning techniques for remote surveillance as a replacement for conventional smoke and fire alarms.

TEACHING EXPERIENCE

Introduction to VLSI Design 2019 Fall
Head Teaching Assistant *Instructor: Chen-Yi Lee*

· This course aims to convey junior EE students techniques to analyze and design system by means of VLSI technology and CAD tools. Starting from VLSI process technology and transistor's behavior.

Integrated Circuit Design Laboratory 2018 Spring / 2017 Fall
Head Teaching Assistant / Teaching Assistant *Instructor: Chen-Yi Lee*

· This course aims to convey the senior and graudated EE students techniques to design the VLSI chips using state-of-the-art CAD tools. In addition to learning CAD tools for performance-driven and cost-effective IC designs, a top-down design flow and related environment will also be addressed.

Introduction to Machine Learning 2018 Spring
Teaching Assistant *Instructor: Chen-Yi Lee*

· This course introduces the fundamental concepts and algorithms that enable computers to learn from experience, with an emphasis on their practical application to real problems.

ACADEMIC ACHIEVEMENTS

Publications

Journal

· Eugene Lee and Chen-Yi Lee, **PPG-Based Smart Wearable Device with Energy-Efficient Computing for Mobile Health-care Applications**, IEEE Sensors Journal, vol. 21, no. 12, pp. 13564-13573, 15 June, 2021, doi: 10.1109/JSEN.2021.3069460.

Conference

· Eugene Lee, Cheng-Han Huang and Chen-Yi Lee, **Few-Shot and Continual Learning with Attentive Independent Mechanisms**, In Proceedings of the International Conference on Computer Vision (**ICCV**), October 2021

· Eugene Lee, Evan Chen and Chen-Yi Lee, **Meta-rPPG: Remote Heart Rate Estimation Using a Transductive Meta-Learner**, In Proceedings of the European Conference on Computer Vision (**ECCV**), August 2020

· Eugene Lee and Chen-Yi Lee, **NeuralScale: Efficient Scaling of Neurons for Resource-Constrained Deep Neural Networks**, In Proceedings of the IEEE Conference on Computer Vision and Pattern Recognition (**CVPR**), June 2020 (**Oral**)

· Eugene Lee, Annie Ho, Yi-Ting Wang, Cheng-Han Huang and Chen-Yi Lee, **Cross-Domain Adaptation for Biometric Identification Using Photoplethysmogram**, International Conference on Acoustics, Speech, and Signal Processing (**ICASSP**), May 2020

· Eugene Lee, Tsu-Jui Hsu and Chen-Yi Lee, **Centralized State Sensing Using Sensor Array on Wearable Device**, International Symposium on Circuits and Systems (**ISCAS**), May 2019

· Eugene Lee, Tsu-Jui Hsu and Chen-Yi Lee, **Continuous Blood Glucose Monitoring on Wearable Device using Photoplethysmography**, NSF IoT Workshop (**ICCAD**), Nov 2018

Awards

· Novatek Ph.D. Fellowship 2021

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· Recipient of Broadcom Foundation Scholarship in 2019
· 3rd place in Synopsys ARC Contest in 2017
· Award recipient of International ICCAD Contest in 2016

PATENTS

Chen-Yi Lee, Eugene Lee and Tsu-Jui Hsu, 2019, Physiological Sensing Method and Device Using the Same, US16441801, filed June 14, 2019.