Hsin-Pai (Dave) Cheng

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QUALIFICATIONS

My research is machine learning and its applications. I am focusing on efficient deep learning on the edge, optimization algorithms for distributed machine learning, machine learning privacy and security.

SELECTED RESEARCH WORK

Selected Publications

- **H. Cheng**, Y. Huang, X. Guo, Y. Huang, F. Yang, H. Li, Y. Chen, "Differentiable Fine-grained Quantization for Deep Neural Network Compression," the 32st Annual Conference on Neural Information Processing Systems **(NIPS)** *Compact Deep Neural Networks with industrial applications workshop,* 2018. **(spotlight presentation)**
- **H. Cheng**, P. Yu, H. Hu, H. Li, and Y. Chen. "LEASGD: an Efficient and Privacy-Preserving Decentralized Algorithm for Distributed Learning," the 32st Annual Conference on Neural Information Processing Systems **(NIPS)** *Privacy Preserving Machine Learning workshop,* 2018.
- **H. Cheng**, J. Shen, H. Yang, C. Wu, H. Li and Y. Chen. "AdverQuil: an Efficient Adversarial Detection and Alleviation Technique for Black-Box Neuromorphic Computing Systems" 24th Asia and South Pacific Design Automation Conference **(ASP-DAC)**, 2019.
- C. Wu, **H. Cheng**, S. Li, H. Li, and Y. Chen, " ApesNet: A Pixel-wise Efficient Segmentation Network for Embedded Devices," *IET Cyber-Physical Systems: Theory & Applications*, 2016.

EDUCATION

PhD in Electrical and Computer Engineering ……Sept. 2017 – Dec. 2019 (est.)

- **DUKE UNIVERSITY**, Durham, North Carolina

Master of Science in Electrical and Computer Engineering ……..….Sept. 2015 – May. 2017

- **UNIVERSITY OF PITTSBURGH**, Pittsburgh, Pennsylvania

Bachelor of Science in Mechanical and Electro-Mechanical Engineering …...…….Sept. 2009 – May. 2014

- **NATIONAL SUN YAT-SEN UNIVERSITY**, Taiwan

PROFESSIONAL EXPERIENCE

Teaching Assistant, *Duke University*, Durham North Carolina, USA……..…...…...Aug. 2018 – Dec. 2018

- *ECE 565 - Performance Optimization & Parallelism* for Fall 2018 term

Instructor, *University of Pittsburgh*, Pittsburgh, Pennsylvania, USA…….....…..Aug. 2016 – Dec. 2016

- Taught *ENGR 1869 - Introduction to Electrical and Computer Engineering* for Fall 2016 term

COMPETITION EXPERIENCE

2018 Duke - Computer Science Datathon ……..Oct. 2018

- **Mentor,** teaching participants to analyze and visualize data.

2018 CVPR - Low Power Image Recognition Competition ……..Jul. 2018

- **3rd prize on Track 2**, mentoring a team of undergraduate students using Caffe2 ($500 prize)

2017 CVPR - Low Power Image Recognition Competition …….Jun. 2017

- **Special Prize on Track 3**, using NVIDIA TX2 and Tensorflow.

2017 Duke - Duke Machine Learning Kaggle Competition……...Dec. 2017

- **1st place,** solo winner.