

Cheng-Yang Fu

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EDUCATION

Ph.D. Student in Computer Science May 2015 – May 2019
The University of North Carolina at Chapel Hill
– Advisor: Alexander C. Berg
– Research in computer vision and deep learning
– Thesis: *Single-Shot Object Detector Series and A Future Application of Object Detection*, defended on May 20th 2019.

Ph.D. Student in Computer Science Aug.2014 – May2015
The University of North Carolina at Chapel Hill
– Advisor:James H. Anderson
– Research in Real-Time System

M.Sc. in Computer Science Sep.2008 – Jul.2010
National Tsing Hua University, Taiwan (GPA: 4.0)
– Advisor: Ren-Song Tsay
– Thesis: *A Shared-Variable-Based Synchronization Approach to Efficient Cache Coherence Simulation for Multi-Core Systems*

B.Sc. in Computer Science Sep.2004 – Jun.2008
National Tsing Hua University, Taiwan (GPA: 3.74/3.86 for senior years)
– Advisor: Ren-Song Tsay
– Project: Embedded System Simulator Design: Nintendo Entertainment System

Relevant Areas of Study

- Now: Computer Vision; Deep Learning
- Previous : Real-Time Systems; Multi-Core Simulation; Software/Hardware Co-simulation

WORK EXPERIENCES

- **Research Scientist, Facebook AI** September2019 – now
– Develop novel and accurate computer vision algorithms and systems, leveraging deep learning and machine learning on big data resources.
- **Research Assistant, UNC Computer Vision Group** June.2015 – May.2019
– Research in Computer Vision and Deep Learning.
- **Research intern, Shopagon** May2018 – Au.2018
– Improve Semantic Segmentation of Clothing for better visual search.
- **Software engineer intern, Waymo(Google self-driving car)** May2017 – Aug.2017
– Improve scene understanding system of self-driving car.

- **Research Scientist Internship, Amazon Lab126** May2016 – Aug.2016
 - Based on SSD, design a detector for person detection and pose estimation in a single shot.
- **Research Assistant, UNC Real-Time Systems Group** Aug.2014 – May.2015
 - Research in Real-Time Systems.
 - Reduce Shared-Hardware interference in Multi-Core platform
- **Research Assistant of Institute of Information Science, Academia Sinica, Taiwan** Oct.2011 – Jun.2014
 - Supervisor: Tyng-Luh Liu
 - Worked on various problems related with computer vision
 - Semantic Segmentation on Kinect RGB-D dataset
 - Apply Deep Learning on Edge Detection
- **Corporal of Navy, Taiwan** Sep.2010 – Aug.2011
 - worked psychological warfare on the Knox class frigate (military service)
- **Engineer of Industrial Technology Research Institute, Taiwan** Sep.2009 - Jun.2010
 - Wrote a 2.5D map application for android system
- **Intern of Industrial Technology Research Institute, Taiwan** Jun.2007 - Sep.2007
 - Wrote a software version of decoders of WiMax System-on-Chip

SKILLS

- Deep Learning Libraries: Caffe, Tensorflow, PyTorch
- Programming Languages: C/C++, Java, Python, Matlab
- Hardware Description Language: Verilog

OPEN SOURCES

- maskrcnn-benchmark.
 - <https://github.com/facebookresearch/maskrcnn-benchmark>
 - One of the maintainer of the repository.
 - 4994 stars on 04/24/2019.

PUBLICATIONS

CONFERENCES

- **Cheng-Yang Fu**, Tamara L. Berg, and Alexander C. Berg IMP: Instance Mask Projection for High Accuracy Semantic Segmentation of Things.”, ICCV 2019.
- **Cheng-Yang Fu**, Mykhailo Shvets, and Alexander C. Berg *RetinaMask: Learning to predict masks improves state-of-the-art single-shot detection for free .”* arXiv:1901.03353 2019.

- Phil Ammirato, **Cheng-Yang Fu**, Mykhailo Shvets, Jana Kosecka and Alexander C. Berg. *Target Driven Instance Detection* .” arXiv:1803.04610 2018.
- **Cheng-Yang Fu**, Joon Lee, Mohit Bansal and Alexander C. Berg. *Video Highlight Prediction Using Audience Chat Reactions.*” EMNLP 2017.
- **Cheng-Yang Fu*** , Wei Liu* , Ananth Ranga , Ambrish Tyagi , Alexander C. Berg. *DSSD : Deconvolutional Single Shot Detector.*” arXiv:1701.06659. (*=Equal Contribution)
- Patrick Poirson, Phil Ammirato, **Cheng-Yang Fu** , Wei Liu, Jana Kosecka, and Alexander C. Berg . *Fast Single Shot Detection and Pose Estimation.* 3DV 2016.
- Wei Liu, Dragomir Anguelov, Dumitru Erhan, Christian Szegedy, Scott Reed, **Cheng-Yang Fu**, Alexander C. Berg. *SSD: Single Shot MultiBox Detector.* ECCV 2016.
- Namhoon Kim, Bryan C. Ward, Micaiah Chisholm, **Cheng-Yang Fu**, James H. Anderson, and F. Donelson Smith. *Attacking the One-Out-Of-m Multicore Problem by Combining Hardware Management with Mixed-Criticality Provisioning* RTAS 2016. **Winner, outstanding paper award.**
- Meng-Huan Wu, Peng-Chih Wang, **Cheng-Yang Fu**, and Ren-Song Tsay. *A High-Parallelism Distributed Scheduling Mechanism for Multi-Core Instruction-Set Simulation.* DAC 2011.
- **Cheng-Yang Fu**, Meng-Huan Wu, and Ren-Song Tsay. *A Shared-Variable-Based Synchronization Approach to Efficient Cache Coherence Simulation for Multi-Core Systems.* DATE 2011.
- Meng-Huan Wu, **Cheng-Yang Fu**, Peng-Chih Wang, and Ren-Song Tsay. *An Effective Synchronization Approach for Fast and Accurate Multi-core Instruction-set Simulation.* EMSOFT 2009.

JOURNAL

- Meng-Huan Wu, **Cheng-Yang Fu**, Peng-Chih Wang, and Ren-Song Tsay. *A Distributed Timing Synchronization Technique for Parallel Multi-Core Instruction-Set Simulation.* TECS 2013.
- Meng-Huan Wu, Peng-Chih Wang, **Cheng-Yang Fu**, and Ren-Song Tsay. *An Extended SystemC Framework for HW/SW Co-Simulation.* TODAES 2012.

PATENTS

- **Cheng-Yang Fu**, Meng-Huan Wu, and Ren-Song Tsay, Shared-Variable-Based (SVB) Synchronization Approach for Multi-Core Simulation, US Patent, 2011.
- Meng-Huan Wu, **Cheng-Yang Fu**, Peng-Chih Wang, and Ren-Song Tsay, Method and Device for Multi-Core Instruction-Set Simulation, Taiwan/US Patent, 2009.

Teaching Assistant Courses

- COMP 410: Data Structure, taught by Prof. David Stotts at UNC Chapel Hill.

Academic Services

Serving as the reviewers for the following conferences and transactions.

- IEEE Computer Society Conference on Computer Vision and Pattern Recognition (CVPR'2020)
- IEEE International Conference in Computer Vision (ICCV'2019)
- IEEE IEEE/RSJ International Conference on Intelligent Robots and Systems(IROS'2019)
- IEEE Computer Society Conference on Computer Vision and Pattern Recognition (CVPR'2019)
- IEEE Asian Conference on Computer Vision(ACCV'2018)
- IEEE Computer Society Conference on Computer Vision and Pattern Recognition (CVPR'2018)
- IEEE Transactions on Image Processing
- IEEE Transactions on Multimedia
- IEEE Transactions on Industrial Electronics
- IEEE Transactions on Pattern Analysis and Machine Intelligence