

# YIREN (AARON) ZHAO

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## EDUCATION

**University of Cambridge, Cambridge, UK**

*Expected Grad. 2020*

*PhD in Computer Science*

**University of Cambridge, Cambridge, UK**

*Grad. June 2017*

*Master of Philosophy in Advanced Computer Science, Award of Distinction*

**Imperial College London, London, UK**

*Grad. June 2016*

*Bachelor of Engineering in Electrical & Electronic Engineering*

Award of honors: First Class Honors; Decile: **Ranked 2nd of the year**;

## SELECTED AWARDS AND HONORS

**EPSRC International Doctoral Studentship joint University of Cambridge Computer Laboratory Premium Scholarship** *2017*

Fully funded phd scholarship for 3.5 years.

**Willis Jackson Metal and Prize**

*2016*

For excellence in academic performance, one award per academic year.

**Dean's List**

*2016*

For top-ranked students in the department.

**Faculty of Engineering UROP Award,**

*2015*

Award to undergraduate Imperial College students with excellence in research projects.

## PAPERS & THESIS

**Pay Attention to Features, Transfer Learn Faster CNNs**

K Wang\*, X Gao\*, Y Zhao, X Li, D Dou, X Gao, and C Xu, in submission

**Blackbox Attacks on Reinforcement Learning Agents Using Approximated Temporal Information**

Y Zhao\*, I Shumailov\*, C Han, X Gao, R Mullins and R Anderson, in submission

**Focused Quantization for Sparse DNNs**

Y Zhao\*, X Gao, R Mullins and C Xu

Thirty-third Conference on Neural Information Processing Systems (NeurIPS 2019)

**Sitatapatra: Blocking the Transfer of Adversarial Samples**

I Shumailov\*, X Gao\*, Y Zhao\*, R Mullins, R Anderson and C Xu, in submission

**Automatic Generation of Multi-precision Multi-arithmetic CNN Accelerators for FPGAs**

Y Zhao\*, X Gao\*, X Guo\*, J Liu, E Wang, R Mullins, P Cheung, G Constantinides and C Xu in submission

**The Taboo Trap: Behavioural Detection of Adversarial Samples**

I Shumailov\*, Y Zhao\*, R Mullins and R Anderson, in submission

**Characterizing Sources of Ineffectual Computations in Deep Learning Networks**

M Nikolic, M Mahmoud, Y Zhao, R Mullins and A Moshovos

International Symposium on Performance Analysis of Systems and Software 2019 (ISPASS 2019)

**Dynamic Channel Pruning: Feature Boosting and Suppression**

X Gao\*, Y Zhao\*, R Mullins and C Xu

International Conference on Learning Representations 2019 (ICLR 2019)

**To compress or not to compress: Understanding the Interactions between Adversarial Attacks and Neural Network Compression**

Y Zhao\*, I Shumailov\*, R Mullins and R Anderson

The Conference on Systems and Machine Learning 2019 (SysML 2019)

**Mayo: A Framework for Auto-generating Hardware Friendly Deep Neural Networks**

Y Zhao\*, X Gao\*, R Mullins and C Xu  
 2nd International Workshop on Embedded and Mobile Deep Learning (Workshop of Mobisys) (EMDL 2018)  
**Redundancy-Reduced MobileNet Acceleration on Reconfigurable Logic For ImageNet Classification**  
 J Su, J Faraone, J Liu, Y Zhao, D Thomas, P Leong and P Cheung  
 14th International Symposium on Applied Reconfigurable Computing (ARC 2018)  
**An Efficient Implementation of Online Arithmetic**  
Y Zhao, J Wickerson and G Constantinides  
 2016 International Conference on Field-Programmable Technology (FPT 2016)  
**Improving Compression Pipelines For Convolutional Neural Networks**  
 Master thesis  
 \* indicates equal contribution

## RESEARCH EXPERIENCE

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**Microsoft Research New England, Research Intern** *June 2019-Oct 2019*  
 Supervisor: Dr. Nicolo Fusi

- Working on Project AutoML
- Design novel hardware-aware AutoML methods

**Microsoft Research Redmond, Research Intern** *June 2018-Oct 2018*  
 Supervisor: Dr. Daniel Lo and Dr. Eric Chung

- Working on Project Catapult and Project Brainwave
- Design and implement novel compression techniques for neural network training
- The developed techniques are approved to be in the next generation training hardware architecture at Microsoft
- More than 4 US patents in application

**Microsoft Research Cambridge, Research Intern** *June 2017-Oct 2017*  
 Supervisor: Dr. Hitesh Ballani

- Working on Project Sirius
- Design and research on new routing methods between racks in a datacenter
- Implemented a Top of Rack switch prototype using FPGAs

**Ocado Technology 10x, Machine learning researcher (Intern)** *June 2016-Oct 2016*

- Ocado Technology 10x is the research department of Ocado, the world's largest online only grocery retailer
- Focused on designing an autonomous robot used for delivering grocery orders using Reinforcement Learning

**Machine learning consultant at Tangi0** *July 2016-Sep 2016*

- Tangi0 is a R&D start-up company focusing on manufacturing novel materials
- My consulting work includes exploiting machine learning techniques (DNN and CNN) on signal processing and also gesture recognition using the company's novel materials

**Radio Frequency Laboratory in University of Electronic Science and Technology of China**  
 Supervisor: Prof. Guangjun Wen *June 2014 - Oct 2014*

- Implementing RFID Analog Circuits on small scale PCB(printed circuit board) for a commercial product
- Final product is currently on the commercial market

## SKILLS

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**Programming:** Python (proficient), C++, C, R, ARM Assembly, Verilog (proficient), Matlab (proficient), Haskell,  $\LaTeX$

**Operating Systems:** Windows, Mac OS X, Linux

**Practical skills:** Compilers, Embedded systems, RTL design and PCB design