

Youchao Wang

Department of Engineering, University of Cambridge

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Education

Ph.D. in Engineering

University of Cambridge, UK, 2019 – present

- Electrical Engineering Division, Department of Engineering.

M.Phil. in Engineering (By Research)

University of Cambridge, UK, 2018 – 2019

- Electrical Engineering Division, Department of Engineering.

B.Eng. Electronic Engineering (1st Class Honours)

University of Manchester, UK, 2016 – 2018

- Second year direct entry. Final grade: 87%. Third year rank: 3/250. Second year rank: 1/240.

B.Eng. Electrical Engineering and its Automation

North China Electric Power University, China, 2014 – 2018

- First and Second year final result: 83%. First year rank: 2/119.

High School Graduate

Tsinghua High School, China, 2011 – 2014

Work Experience

Research Assistant

Department of Engineering, University of Cambridge, UK

Jan. 2019 – Mar. 2019

- Supervisor: Dr. Phillip Stanley-Marbell
- Embedded system circuit design and embedded system software development. Part time.

Research Assistant

Department of Engineering, University of Cambridge, UK

Aug. 2018 – Sep. 2018

- Supervisor: Dr. Phillip Stanley-Marbell
- Research topic: Deriving physically-inspired sensor signal invariants using a physics specification language
- Compiler Construction, Programming language design, Signal and Noise, Dimensional analysis, Interaction with a physically-inspired high-level description language (*Newton*).

Research Assistant

School of Electrical and Electronic Engineering, University of Manchester, UK

Jul. 2017 – Sep. 2017

- Supervisors: Prof. Bruce Grieve in collaboration with Prof. Christopher Collins at University of Reading
- Research topic: “Internet of Things” LoRaWAN Sensor System for Protecting Rivers and Watercourses
- Internet of Things (IoT) in e-Agri, Hardware design, PCB design, Firmware design and implementation, Wireless communication.

Paid personal tutor

Hanban Foreign Learning Programme, North China Electric Power University, China

Jul. 2016 – Aug. 2016

- Paid one-on-one tutoring in the form of reading, writing and speaking (Chinese and English).

Project Portfolio

HoloDeck – Investigating Multiple Spatial Light Modulators Systems

2019 – present

- Ph.D. Degree Research Project, Supervisor: Prof. Tim Wilkinson
- Focus: Computer generated holograms, Spatial light modulators, PCB design, Algorithm implementation.

Interfacing a High Speed Ferroelectric Spatial Light Modulator

2019 – present

- Research Side-Project, Supervisor: Prof. Tim Wilkinson
- Focus: Spatial light modulator, Computer generated holograms, PCB design, FPGA firmware implementation.

Computer Generated Holography on a Digital Signal Processor System

2019 – 2019

- M.Phil. Degree Research Project, Supervisor: Prof. Tim Wilkinson
- Focus: Computer generated holograms, Digital signal processing, Algorithm implementation.

Sensor Data Fusion using Automated Dimensional Function Synthesis

2018 – 2019

- M.Phil. Degree Research Project, Supervisor: Dr. Phillip Stanley-Marbell
- Focus: Miniature hardware system design, Firmware implementation, Physics specification language compiler design.
- Published a first-author conference and journal double-track paper focusing on the implementation of a dimensional function synthesis compiler.

- “IoT” Water Quality Monitoring System for Protecting Rivers and Watercourses** 2017 – 2018
- B.Eng. Degree Individual Project, Supervisor: Prof. Bruce Grieve
 - Focus: Low-cost turbidity sensor design, Low power system design, Encoding and decoding to enhance the data transmission efficiency
 - Published a first-author journal paper focusing on the design of a low-cost turbidity sensor.

- Embedded System Project Team Competition (3rd Rank Among 48 Groups)** 2016 – 2017
- Second-year Team Project: Line-following robotic buggy using light-sensitive sensor array and ultrasound sensor.
 - A major contributor to hardware design and software implementation, including buggy structural design, line-detection application, motor control and programming.
 - Leading role in team organisation (team of 4).
 - 90/100 personal project overall score.

Position of Responsibility

- Electronic Engineering Third Year Student Representative** 2017 – 2018
- Electrical and Electronic Engineering Second Year Student Representative** 2016 – 2017
- Chairman of NCEPU International Education School Students’ Union** 2014 – 2015
- Chairman of Tsinghua High School Students’ Union** 2012 – 2013
- Chairman and General Secretary of Tsinghua High School Model United Nations** 2012 – 2013

Selected Honours and Awards

- CSC Cambridge Scholarship (Fully funded)** Jun. 2019
- CSC Masters Programme Scholarship (Partly funded)** Jun. 2018
- Third Year 3rd Prize in School of EEE, UoM (Top 3)** Jun. 2018
- 2018 Beijing Outstanding Higher Education Graduate Title** Jun. 2018
- Second Year 1st Prize in School of EEE, UoM (Top 1)** Oct. 2017
- Beijing Capital University & College “Pioneer Cup” Outstanding Member Title** Oct. 2016
- 3rd Prize Student Scholarship at NCEPU** Sep. 2016
- Entrepreneur Student Scholarship (Top 3) at NCEPU** Dec. 2015
- 1st Prize (Top 2) Student Scholarship at NCEPU** Sep. 2015
- Special Award (Top 1‰) in National English Competition for College Students** May. 2015
- 2nd prize (Top 10) in 20th National English Speaking Competition, Beijing region** Dec. 2014

Key Skills

Subject Related

- Proficient in C programming (Embedded C and compiler design). Proficient in MacOS and Linux (Ubuntu, Scientific Linux, etc.).
- Know well in Verilog and VHDL coding.
- Know well in C++, Python, Java (Eclipse IDE and Android software development), Matlab and Simulink.
- Proficient in MplabX IDE and Code Composer Studio. Know well in Cadence Software (VLSI), Xilinx IDE and Quartus Prime (VHDL and Verilog).
- Proficient in Altium Designer. Know well in Eagle, Designspark, NI Multisim (Circuit and PCB design). Know well in Solidworks and AutoCAD (Product design).
- Proficient in the use of microcontrollers (PIC18 family). Know well in Raspberry Pi.
- Know well in the Cortex M series, TI KeyStone DSPs and Lattice iCE40 FPGAs.

IT

- Proficient in the use of Adobe Family (Audition, After Effect, Premiere, Photoshop), Microsoft Office Products (Invited talk *How to make PPT better looking* at NCEPU, 2016), Corel VideoStudio, Edius, FinalCut.
- Proficient in the use of L^AT_EX (Invited talk *How to use L^AT_EX* at University of Cambridge, 2019)
- Proficient in Photography, Filmmaking and Video Editing.

Driving Licence

- Full clean driving licence in both China and UK.

Language

- English (IELTS 8.0/9.0), Chinese (Native Speaker)

Interests

Photography, Tennis, Piano, Model United Nations.

Publication List

- [1] **HARDWARE IMPLEMENTATIONS ON COMPUTER GENERATED HOLOGRAPHY: A REVIEW**
Youchao Wang, Daoming Dong, Peter Christopher, Andrew Kadis, Ralf Mouthaan, Fan Yang and Timothy Wilkinson. *In Submission*, 2019.
- [2] **COMPUTER HOLOGRAM GENERATION WITH ONE-STEP PHASE-RETRIEVAL USING A DIGITAL SIGNAL PROCESSOR BOARD**
Youchao Wang, Daoming Dong, Peter Christopher, Andrew Kadis and Timothy Wilkinson. *Accepted*, 2019.
- [3] **LOOKUP TABLES FOR PHASE RANDOMISATION IN HARDWARE GENERATED HOLOGRAMS**
Peter Christopher, **Youchao Wang**, Daoming Dong, Andrew Kadis, Ralf Mouthaan and Timothy Wilkinson. *In submission*, 2019.
- [4] **NOVEL PREDICTIVE SEARCH ALGORITHM FOR PHASE HOLOGRAPHY**
Peter Christopher, **Youchao Wang**, and Timothy Wilkinson. *In Submission*, 2019.
- [5] **FIXED-POINT ACCURACY ANALYSIS OF 2D FFT FOR THE CREATION OF COMPUTER GENERATED HOLOGRAM**
Daoming Dong, **Youchao Wang**, Peter Christopher, Andrew Kadis and Timothy Wilkinson. *In Submission*, 2019.
- [6] **EFFICIENT SENSOR DATA FUSION USING AUTOMATED DIMENSIONAL FUNCTION SYNTHESIS**
Youchao Wang, Sam Willis, Vasileios Tsoutsouras and Phillip Stanley-Marbell. *Accepted*, 2019.
- [7] **DISTRIBUTED WATER QUALITY MONITORING SYSTEM USING INTERNET OF THINGS WIRELESS PROTOCOL – LONG RANGE WIDE AREA NETWORK**
Shariar Morshed Rajib, **Youchao Wang**, Chris Collins and Bruce Grieve. *In Submission*, 2019.
- [8] **SAFEGUARDING SENSOR DEVICE DRIVERS USING PHYSICAL CONSTRAINTS**
Gregory Brooks, **Youchao Wang** and Phillip Stanley-Marbell. In *Proceedings of ACM EuroSys 2019* (poster), Dresden, 2019.
- [9] **LOW-COST TURBIDITY SENSOR FOR LOW-POWER WIRELESS MONITORING OF FRESH-WATER COURSES**
Youchao Wang, Shariar Morshed Rajib, Chris Collins and Bruce Grieve. *IEEE Sensors Journal*, Volume: 18, Issue: 11, June 1, 2018. (Officially announced as **one of the 25 most downloaded Sensors Journal** papers in the months of October, November and December 2018, and **the 7th most popular document** as of January 2019)
- [10] **INTEREST SET MECHANISM TO IMPROVE THE TRANSPORT OF NAMED DATA NETWORKING**
Xiaoke Jiang, Jun Bi, **Youchao Wang** and You Wang. In *Proceedings of ACM SIGCOMM13* (poster, Section 12), Hongkong, 2013.
- [11] **TECH REPORT: INTEREST SET MECHANISM TO IMPROVE THE TRANSPORT OF NAMED DATA NETWORKING**
Xiaoke Jiang, Jun Bi, **Youchao Wang** and You Wang. *Tsinghua University*, 2013.

Referees

Available on request