

# 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 (1<sup>st</sup> 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 – 2019*  
◦ Ph.D. Degree Research Project, Supervisor: Prof. Tim Wilkinson  
◦ Focus: Computer generated holograms, Spatial light modulators, PCB design, Algorithm 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.
- Interfacing a High Speed Ferroelectric Spatial Light Modulator** *2019 – present*  
◦ M.Phil. Degree Research Project, Supervisor: Prof. Tim Wilkinson  
◦ Focus: Spatial light modulation, Computer generated holograms, PCB design, FPGA firmware 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 (3<sup>rd</sup> 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

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

## Selected Honours and Awards

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<b>Third Year 3<sup>rd</sup> Prize in School of EEE, UoM (Top 3)</b>	Jun. 2018
<b>2018 Beijing Outstanding Higher Education Graduate Title</b>	Jun. 2018
<b>Second Year 1<sup>st</sup> Prize in School of EEE, UoM (Top 1)</b>	Oct. 2017
<b>Beijing Capital University &amp; College “Pioneer Cup” Outstanding Member Title</b>	Oct. 2016
<b>3<sup>rd</sup> Prize Student Scholarship at NCEPU</b>	Sep. 2016
<b>Entrepreneur Student Scholarship (Top 3) at NCEPU</b>	Dec. 2015
<b>1<sup>st</sup> Prize (Top 2) Student Scholarship at NCEPU</b>	Sep. 2015
<b>Special Award (Top 1‰) in National English Competition for College Students</b>	May. 2015
<b>2<sup>nd</sup> prize (Top 10) in 20<sup>th</sup> National English Speaking Competition, Beijing region</b>	Dec. 2014

## Key Skills

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### 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  $\text{\LaTeX}$  (Invited talk *How to use \LaTeX* 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

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Photography, Tennis, Piano, Model United Nations.

## Publication List

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[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. *In Submission*, 2019.

[3] [NOVEL PREDICTIVE SEARCH ALGORITHM FOR PHASE HOLOGRAPHY](#)

Peter Christopher, **Youchao Wang**, and Timothy Wilkinson. *In Submission*, 2019.

[4] [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.

[5] [EFFICIENT SENSOR DATA FUSION USING AUTOMATED DIMENSIONAL FUNCTION SYNTHESIS](#)

**Youchao Wang**, Sam Willis, Vasileios Tsoutsouras and Phillip Stanley-Marbell. *Accepted*, 2019.

[6] [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.

[7] [SAFEGUARDING SENSOR DEVICE DRIVERS USING PHYSICAL CONSTRAINTS](#)

Gregory Brooks, **Youchao Wang** and Phillip Stanley-Marbell. In *Proceedings of ACM EuroSys 2019* (poster), Dresden, 2019.

[8] [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 **7<sup>th</sup> most popular document** as of January 2019)

[9] [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.

[10] [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

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Available on request