

# Wenshuai Zhao

Master Student at Fudan University

 220 Handan Road, Shanghai, China





 [wenshuai.zhao@aalto.fi](mailto:wenshuai.zhao@aalto.fi)  +358 442391268

 <https://lingyunfdu.github.io/>




 <https://github.com/LINGYUNFDU>






## Education and Experience

- Sep. 2017– Jan. 2020  **M.E. Electronic and Communication Engineering, Fudan University, China.**  
Thesis topic: *VHL Gene Mutation Prediction of Clear Cell Renal Cell Carcinoma Based on CT Images.*  
GPA: 3.33/4.0 IELTS: 6.5 (Reading 8.5, Writing 6.0)
- Jan. 2018– Jun. 2018  **M.Sc. Double Degree in Information and Communication Technology, University of Turku, Finland.** Master Thesis: 5/5
- Jul. 2014– May. 2017  **Electronical Engineer. China General Nuclear Power Corporation, Shenzhen, China**
- Sep. 2010– Jun. 2014  **B.E. Mechanical Design, Manufacture & Automation, Central South University, China.**  
Thesis topic: Level control system for manufacturing aluminum sheet.  
GPA: 85/100 (In former three years: 87/100, ranking 3/33)  
All math related courses >90/100  
Outstanding Graduate of Hunan Province





## Research Interests

- Algorithm:**  Deep Learning, Reinforcement Learning, Signal Processing.
- Engineering:**  Embedded System, ASIC and FPGA Design, CUDA Programming.
- Application:**  Robotics, Healthcare.






## Research Projects

- 2019  **CT images based noninvasive determination of gene mutations in renal cell carcinoma.**  
**Details:** Proposed and compared 2 algorithms respectively based on manual features and features extracted from 3D CNN segmentation network innovatively. The first algorithm was aggregated using multi instance learning to get patient level prediction.  
**Achievements:** The third section of master section.
- 2019  **Deep learning based CT images segmentation for kidney and tumor.**  
**Details:** Proposed multi scale supervised 3D U-Net enhanced by tumor aware Loss Function and specific post processing algorithm employing expert knowledge.  
**Achievements:** One paper accepted; [Ranking 7/106](#) in the [\(MICCAI 2019\) Challenge](#).
- 2018  **GPU based accelerator for beamformer of multitransmission ultrasound imaging modalities.**  
**Details:** Developed CUDA based framework to accelerate two beamformers: Delay and Sum algorithm, and Joint Transmitting-receiving Minimum Variance algorithm. Fully employed the parallel computing capacity of GPU and memories in different levels.  
**Achievements:** The speeds of imaging algorithms were accelerated around 100 times using one Titan V GPU with the same image quality compared with running on CPU.














## Academic Projects

- Autumn 2018  **ASIC and FPGA design of 64 points FFT processor.** (Major participant)  
**Details:** C++ simulation and Verilog design to implement the 4-based Cooley-Tukey algorithm, then validated on ASIC and FPGA, analyzed the power, area and maximum frequency.
-  **Bluetooth communication system simulation.** (Major Participant)  
**Details:** Used Matlab to simulate the GFSK modulator and designed demodulator to get better performance than 4 dB when BER=0.01.
- Spring 2018  **Building a video surveillance and controlling IoT system.** (Major Participant)  
**Details:** Distance signal acquired by ultrasound sensor was used to triggered camera to take picture of the coming cars, then employed API to recognize the license and model, deciding if the motor would open the gate.
-  **Sobel Application on the Xilinx Zynq Zedboard.** (Major Participant)  
**Details:** Used a webcam for the input data stream, while the output stream was shown on the HDMI display. The Sobel Filter was implemented as a hardware accelerator on the FPGA. An OPENCV software was implemented on the ARM processor as well.











## Challenges

- 2019  The 7<sup>th</sup> place among 106 global teams in the [International Conference on Medical Image Computing and Computer-assisted Intervention \(MICCAI 2019\) Challenge: KiTS 19.](#)
- 2018  The 3<sup>rd</sup> prize in the [National Data Mining competition held by Peking University.](#)  
 The 3<sup>rd</sup> prize in the [National Biomedical Engineering Competition.](#)
- Undergraduate  The 2<sup>nd</sup> prize of the Hunan Province Mathematical Contest in Modeling (2012).  
 The 2<sup>nd</sup> prize of the Hunan Province Mechanics Competition (2012).








## Selected Coursework

- Graduate  UTU: Machine Learning and Algorithms Seminar  
 UTU: FPGA Prototyping  
 UTU: IoT Systems: Design and Applications  
 UTU: Advanced Sensor Networking  
 Fudan: Digital Signal Processing: Theory and Practice  
 Fudan: High-Speed Electronic System Design  
 Fudan: Wireless Communication Engineering  
 Fudan: Digital Signal Processing VLSI Design  
 Fudan: Parallel Computing: Architecture and Programming
- Undergraduate  CSU: Fundament of Mechanical Control Engineering  
 CSU: Principle & Application of Microcomputer  
 CSU: Hydraulic Transmission and Control  
 CSU: Fundament of Mechanical Design

## Skills and Interests

Skills	 <b>Language:</b>	English, Mandarin Chinese.	
	 <b>Coding:</b>	C++, Python, Matlab, Verilog, VHDL, Cuda.	
	 <b>Deep Learning:</b>	Pytorch, Tensorflow, Keras.	
	 <b>Drawing:</b>	AutoCAD, Pro/E.	
Interests	 Tennis	 Hiking.	 Ice Skating
	 Swimming	 Travelling.	 Skiing

## Awards

Graduate	 The 2 <sup>nd</sup> Prize of Fudan Academic Scholarship.
Undergraduate	 Outstanding Graduate of Hunan Province (2014).
	 Outstanding Graduate of Central South University (2014).
	 Honored Student of Central South University (100 medalists appointed from 40,000 students, 2012).
	 The 1 <sup>st</sup> Prize of CSU Academic Scholarship (2011, 2012).
	 National Endeavor Scholarship (2011).
	 The 2 <sup>nd</sup> Prize of Sanward Scholarship (2011).

## Publications

2020

- Wenshuai Zhao, Jorge Peña Queralta, Tomi Westerlund, "Sim-to-Real Transfer in Deep Reinforcement Learning for Robotics: a Survey", *2020 IEEE Symposium Series on Computational Intelligence (SSCI)*, Canberra, Australia, IEEE (2020). [Download](#)
- Wenshuai Zhao, Jorge Peña Queralta, Li Qingqing, Tomi Westerlund, "Ubiquitous Distributed Deep Reinforcement Learning at the Edge: Analyzing Byzantine Agents in Discrete Action Spaces", *The 11th International Conference on Emerging Ubiquitous Systems and Pervasive Networks (EUSPN 2020)*, Elsevier (2020). [Download](#)
- Wenshuai Zhao, Jorge Peña Queralta, Li Qingqing, Tomi Westerlund, "Towards Closing the Sim-to-Real Gap in Collaborative Multi-Robot Deep Reinforcement Learning", *The 5th International Conference on Robotics and Automation Engineering*, IEEE (2020). [Download](#)
- Wenshuai Zhao, Dihong Jiang, Jorge Peña Queralta, Tomi Westerlund, "MSS U-Net: 3D segmentation of kidneys and tumors from CT images with a multi-scale supervised U-Net", *Informatics in Medicine Unlocked*, Elsevier (2020). [Download](#)