


# Wenshuai Zhao

Master Student at Fudan University

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




 <https://github.com/LINGYUNFUDU>






## Education and Experience

- Sep. 2017– Jan. 2020  **M.E. Electronic and Communication Engineering, Fudan University, China.**  
Thesis topic: *Deep learning based CT images analysis of renal cell carcinomas.*  
GPA: 3.33/4.0 IELTS: 6.5 (R. 8.5, W. 6.0) Supervisor: [Yuanyuan Wang](#)
- Jan. 2018– Jun. 2018  **M.Sc. Double Degree in Information and Communication Technology, University of Turku, Finland.** Supervisor: [Joha Plosila](#)
- 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:**  Machine Learning, Deep Learning, Signal Processing.
- Engineering:**  Embedded System, ASIC and FPGA Design, CUDA Programming.
- Application:**  Healthcare, Medical Image Analysis, Bioinformatics, Robots, Data Science.

## Research Projects



- 2019  **CT images based noninvasive determination of gene mutations in renal cell carcinoma.**  
**Details:** Proposed 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:** One paper submitted.
- 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 submitted in Arxiv; [Ranking 7/106](#) in the International Conference on Medical Image Computing and Computer-assisted Intervention ([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; One paper submitted.

2017- 2018



-  **Design of a 128-channel FPGA-based platform for development and real-time implementation of new ultrasound methods.** (Major participant)  
**Details:** Surrounding the 128-channel Sonosray Ultrasound Transducer, designed matched FPGA-based transceiver and needed power, clock circuits.  
**Achievements:** Our platform achieved the 3<sup>rd</sup> prize in the [2018 National Biomedical Engineering Challenge](#).

## 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**







 **Language:** English, Mandarin Chinese.  
 **Coding:** C++, Python, Matlab, Verilog, VHDL, Cuda.  
 **Deep Learning:** Pytorch, Tensorflow, Keras.  
 **Drawing:** AutoCAD, Pro/E.

**Interests**


 Tennis     Hiking.     Ice Skating  
 Swimming     Travelling.     Skiing

## Awards

**Graduate**     The 3<sup>rd</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

2019     [Zhao, Wenshuai, and Zengfeng Zeng. "Multi Scale Supervised 3D U-Net for Kidney and Tumor Segmentation." arXiv preprint arXiv:1908.03204 \(2019\).](#)

## Referees

 [Lirong Zheng](#)

Professor and Dean of ICT School at Fudan University, also as Full Professor/ Chair Professor in Media Electronics at KTH.

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 [Zhuo Zou](#)

Professor of Electronic and Computer Systems, Fudan University, also as Adjunct Professor & Docent, University of Turku.

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