

## EDUCATION

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- University of California, Los Angeles (UCLA)** Los Angeles, US  
Ph.D. in Electrical and Computer Engineering, Advisor: Mani B. Srivastava 2020–Current
- University of California, Los Angeles (UCLA)** Los Angeles, US  
M.S. in Electrical and Computer Engineering, Signal and System Area, GPA: 3.89/4.00 2018–2020
- Thesis: “Towards Robust and Secure Audio Sensing Using Wireless Vibrometry and Deep Learning”
  - Courses: Matrix Analysis, Information Theory, Deep Learning and Neural Network, Large Scale Data Mining, Wireless Communication System, Web and Mobile System, Digital Speech Processing
- Fudan University** Shanghai, China  
B.Eng. in Electronics and Information Science and Technology, GPA: 3.63/4.00 2014–2018
- Thesis: “Signal AoA Estimation and Human Fall Detection Using Wi-Fi Channel State Information”
  - Courses: Signal and Communication System, Digital Signal Processing, Probability and Statistics, Data Structure, Analog and Digital Circuit, High Frequency Circuits, Programmable Logic Device and Hardware Description Language, Computer Architecture, Electromagnetic Field and Wave, etc.
- Minor in Data Science, GPA: 3.55/4.00 2016–2018
- Courses: Database Systems, Machine Learning, Data Structure and Algorithm Analysis, Distributed Systems, Macroeconomics, etc.

## EXPERIENCE

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- University of California, Los Angeles (UCLA)** Los Angeles, US  
Graduate Student Researcher at Networking and Embedded System Laboratory (NESL) 2018–2020
- Advisor: Prof. Mani B. Srivastava
- Fudan University** Shanghai, China  
Research Assistant at Multimedia and Mobile Networking Group (MediaNET) 2016–2018
- Advisor: Prof. Yuedong Xu

## PROJECTS

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- Audio Vibration Sensing from Multiple Targets Using Impulse-Radio Ultra-WideBand Radar**
- Implemented an IR-UWB radar system that can isolate target sounds from a noisy background
  - Derived a theoretical analysis on performing audio sensing using impulse-based wireless signals
  - Modified the driver code to re-purpose a XeThru X4M05 radar to sense audio-related vibrations
  - Built a statistical signal processing pipeline to locate sound events and separate multiple sound sources
- Audio Spoofing Detection Using Deep Neural Networks**
- Assembled three deep residual neural network classifier models to protect speech recognition systems from computer-generated fake audios

- Crafted three spectrogram and cepstral coefficients-based features to captures the speech dynamics
- Achived 25% –75% performance improvement compared to the baseline algorithms

### Human Activity Recognition and Fall Detection Using Wi-Fi Channel State Information

- Integrated a robust activity recognition system using the CSI of a commercial Wi-Fi network interface
- Visualized the amplitude of Channel State Information and extracted features using Gabor filters
- Trained a machine learning backend to classify multiple activities and label fall-related samples

### Indoor Positioning and Communication System Using Visible Light

- Created a visible light communication system consisting of 3 LEDs and a photo diode sensor
- Designed LED driver circuits to transmit three separate audio signals using amplitude modulation of the light intensity, and sensor signal processing circuits enabling frequency-division multiplexing
- Deployed a RSS-based localization algorithm on a Renesas RX23T MCU to achieve decimeter level localization in a 1m × 1m × 1m box

## PUBLICATIONS

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- [1] **Z. Wang**, Z. Chen, A. D. Singh, L. Garcia, J. Luo, and M. Srivastava, “UWHear: Through-wall Extraction and Separation of Audio Vibrations Using Wireless Signals”, in *Proceedings of the 18th ACM Conference on Embedded Networked Sensor Systems*, ACM, 2020, pp. 1–14.
- [2] M. Alzantot, **Z. Wang**, and M. B. Srivastava, “Deep Residual Neural Networks for Audio Spoofing Detection”, in *Proc. Interspeech 2019*, 2019, pp. 1078–1082.
- [3] R. Liu, **Z. Wang**, L. Garcia, and M. Srivastava, “Remediat: Remedial actions for internet-of-things conflicts”, in *Proceedings of the 6th ACM International Conference on Systems for Energy-Efficient Buildings, Cities, and Transportation*, ACM, 2019, pp. 101–110.
- [4] **Z. Wang**, Z. Gu, J. Yin, Z. Chen, and Y. Xu, “Syncope detection in toilet environments using wi-fi channel state information”, in *Proceedings of the 2018 ACM International Joint Conference and 2018 International Symposium on Pervasive and Ubiquitous Computing and Wearable Computers*, ACM, 2018, pp. 287–290.

## SKILLS

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- **Programming Language:** Python, MATLAB, C/C++, Assembly, VHDL
- **Tools:** Git, PyTorch, TensorFlow

## SCHOLARSHIPS AND AWARDS

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- Best Poster Honorable Mention Award, UCLA ECE Annual Research Review 2019
- Outstanding Graduates in Shanghai (Top 5% in the EE Department) 2018
- First-class scholarship for outstanding students in Fudan University 2016, 2017, 2018
- The Second Prize in National Undergraduate Electronic Design Contest, Shanghai Area 2017

## EXTRACURRICULAR ACTIVITIES

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- Tutor of Los Angeles Computing Circle 2019 and 2020  
*Taught Algorithms and AI modules in an EECS introduction program targeting high school students*
- President of the Student Union at School of IT, Fudan University 2016  
*Organized Student Professional, Academic, Sports and Culture Activities*