Yuan Xing

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EDUCATION

Ph.D., Electrical and Computer Engineering *August 2016 - May 2020*
Baylor University

M.S., Electrical and Computer Engineering *August 2014 - May 2016*
University of Rochester

B.A., Telecommunication Engineering *August 2010 - May 2014*
Beijing Jiaotong University

EMPLOYMENT EXPERIENCE

Assistant Professor, Engineering & Technology Department *August 2020 - Present*
University of Wisconsin-Stout

Teaching and Research Assistant, Department of ECE *August 2016 - May 2020*
Baylor University

Research Assistant, Department of ECE *August 2015 - May 2016*
University of Rochester

RESEARCH INTERESTS

Digital Signal Processing, **Software Defined Systems**

FUNDING RESEARCH

- Freshwater Collaborative of Wisconsin, "Developing an easy-to-apply, integrated approach to modeling freshwater contamination from farm runoff using only commercial drones, cameras, and software,"$116832 *September 2022*
- Tommy Thompson Leadership Scholarship, "Design and Implement an IoHT Ecosystem to Fight COVID-19 and Future Public Health Crisis in Wisconsin," $60000 *September 2021*
- Wisys Spark Grant, "Advanced Wireless Power Transfer System," $9160 *March 2021*
- UW Stout Startup research funding, Wireless Power Transfer Platform," $3500 *November 2020*

TEACHING EXPERIENCE

- CEE-205 Circuit Design and Analysis *Spring 2022*
- CEE-225 Digital Logic Design *Fall 2020, Spring, Fall 2021, Spring, Fall 2022, Spring 2023*
- CEE-235 Signal and System *Spring, Fall 2021, Spring, Fall 2022, Spring 2023*
- CEE-325 Digital System Design *Spring 2023*
- CEE-425 Computer Network *Fall 2020, Fall 2021, Fall 2022*
- CEE-435 Digital Signal Processing *Fall 2020, Spring 2023*
- CEE-445 Wireless Communication *Spring 2021, Spring 2022*

PROFESSIONAL ACTIVITIES

Conference Presentation

- Oceans' 17 MTS/IEEE Conference, Anchorage, AK *September 2017*
- 2018 IEEE 88th Vehicular Technology Conference, Chicago, IL *August 2018*
- 2021 IEEE CCWC(Best presenter), Virtual Conference *January 2021*
- 2021 IEEE IEMTRONICS(Best presenter), Virtual Conference *April 2021*
- 2022 IEEE CCWC, Virtual Conference *January 2022*

Student Supervision

- Timothy Lu
  - Independent study: Advanced Wireless Communication Systems. *Spring 2021*
- Young Riley
  - Independent study: Advanced Far-field Wireless Power Transfer Systems. *Summer 2021*
- Brandon Cedarblade, James Stevenson, Jenah Call, Jackson Butler
  - Capstone Design: Wireless power transfer robot. *Spring, Fall 2021*
- Cole Glassing , Wesley Larrabee, Nue Thao
  - Capstone Design: The vision-based advanced Quadcopter Drone *Fall 2021*
- Preston Leigh
  - Stout Student research grant: Self-Driving Cars Implementations *Summer 2022*
- Sam Koland, Michael Witt, Jack Lonn
  - DKC3 programming competition *Fall 2022*
- Sam Koland
  - FCW grant student worker: Hyperspectral image processing *Fall 2022, Spring 2023*

Referee for

- GlobalSIP 2017 *June 2017*
- IEE ICC 2018 *December 2017*
- IEEE Communication Letters *May 2017, December 2019*

SELECTED PROFESSIONAL MEMBERSHIP

IEEE member *September 2017 - present*
IEEE IEMTRONICS Technical Committee *April 2021*
IEEE IEMCON Technical Committee *September 2021*
IEEE IEMCON Session Chair - Digital Image Processing *September 2021*
IEEE UEMCON Technical Committee *October 2022*
IEEE CCWC Technical Committee *January 2023*

SELECTED RESEARCH EXPERIENCE

Software Defined System design for Wisconsin Health Systems

- Design the COVID-19 fast diagnosis system
- Optimize the reaction speed of the designed system in the implementation

Hyperspectral Images Processing in Airborne System

- Implement the hyperspectral camera in the airborne system
- Analyze the images to detect the trajectory of the groundwater on the farm

Simultaneous Wireless Information and Power Transfer(SWIPT) Systems Design

- Optimize user-fairness optimization problem for multiple RF energy harvesters
- Established a real SWIPT system with WARP and USRP boards

Far-field Wireless Power Transfer Experimental Platform

- Built the Far-field Wireless Power Transfer Platform
- Implemented the systems on robots and improved the charging efficiency

Wireless Multimedia Delivery System

- Simulated IEEE 802.11ax in MATLAB to validate theoretical development of techniques
- Performed the experiments with USRP to evaluate the network

Underwater Sensor Network Coding Scheme Design

- Invented Dynamic Fountain Code and saved **15%** transmission energy than other coding schemes

SELECTED JOURNALS & CONFERENCES PUBLICATIONS

- **Y. Xing**, A. Verma. "Optimize Path Planning for Drone-Based Wireless Power Transfer System by Categorized Reinforcement Learning", *IEEE 2023 CCWC*. Accepted.
- **Y. Xing**, R. Young, G. Nguyen, M. Lefebvre. "Optimize Mobile Wireless Power Transfer by Finite State Machine Reinforcement Learning", *Proc. 2022 IEEE CCWC*.
- **Y. Xing**, H. Yuan, C. Carson. "Optimize Path Planning for UAV COVID-19 Test Kits Delivery System by Hybrid Reinforcement Learning", *Proc. 2022 IEEE CCWC*.
- **Y. Xing**, R. Young, G. Nguyen, M. Lefebvre. "Optimization of Transmission Strategy for Wireless Power Transfer Using Multi-Armed Bandit Algorithm", *Proc. IEEE 2021 IEMCON*. Virtual Conference.
- **Y. Xing**, Y. Qian and L. Dong. "A Multi-Armed Bandit Approach to Wireless Information and Power Transfer", in *Proc. IEEE Communication Letters* 24.4 (2020): 886-889.
- **Y. Xing** and C. Tapparello,. "Dynamic fountain codes for energy efficient data dissemination in underwater sensor networks", in *Proc. of IEEE OCEANS–Anchorage*. Anchorage, USA. Sep. 2017.
- **Y. Xing** and L. Dong,. "Passive radio-frequency energy harvesting through wireless information transmission", in *Proc. of IEEE Distributed Computing in Sensor Systems(DCOSS)*. Ottawa, Canada. Jun. 2017.
- P. Leigh, **Y. Xing**. "Evaluation of Multiple Convolutional Neural Networks in Training the NVIDIA JetBot", *IEEE UEMCON 2022*.
- W. Shi, X. Liu, **Y. Xing**. "Internet of Things Applied on Assistive Robotics", *Proc. International Journal on Engineering, Science and Technology* 3(1), 67-71.

SKILLS

Software: Python, MATLAB, Verilog, VHDL, Assembly language, C
Devices: Wireless Open Access Research Platform, Universal Software Radio Peripheral, Jetson Nano, Raspberry Pi, Digilent Basys 3 Artix-7 FPGA Trainer Board.