Xue Wei

Albany,NY

xwei4@albany.edu

EDUCATION

University at Albany, State University of New York **09/2019 - present**

Doctor of Philosophy - PhD, Signal Processing & Communications *NY, USA*

GPA: 3.89/4.0

Xidian University **09/2016 - 07/2019**

Master of Engineering, Signal and Information Processing *Shaanxi, China*

GPA: 3.78/4.0

Xidian University **09/2012 - 07/2016**

Bachelor of Engineering, Electrical and Computer Engineering *Shaanxi, China*

GPA: 3.67/4.0

Research Interest

- Machine Learning
- Signal Processing
- Key Generation
- RFI Cancellation
- Wireless Steganography
- Wireless Cryptography
- DoA Estimation

Research Experience

Multistage 2D DoA Estimation in Low SNR **2022 – present**

Advised by: Dr. Dola Saha and Dr. Aveek Dutta

- Propose a three-stage algorithm that methodically exploits digital beamforming, creates virtual subarrays, inspects multiple options and introduces clustering to estimate the DoA in low SNRs

RFI cancellation using RIS **2022 – present**

Advised by: Dr. Dola Saha and Dr. Aveek Dutta

- Estimate incident RFI of the telescope and configure Reconfigurable Intelligent Surface(number, spacing, etc.)
- Find the solution of amplitude and phase of each element of RIS to reflect incident RFI of RIS in order to cancel RFI in the telescope

Key generation **2022 – 2023**

Advised by: Dr. Dola Saha

- Propose a Key Generation model using neural networks from wireless channels
- Extract the implicit features of channel in a compressed form to derive keys with high KGR and low KDR

Wireless steganography **2021 – present**

Advised by: Dr. Dola Saha

- Design a complex-valued neural network, which is more powerful and has a faster learning speed than real-valued neural network, to hide the transmission of secret signals
- This method has nothing to do with any properties of the covert signal (such as waveform or modulation order)
- Transmit signals over the air and apply the transfer learning to retrain the model to further optimize the system and get a lower bit error rate

Teaching human motion **2019 – 2020**

Advised by: Dr. Weifu Wang

- Offer a systematic exploration of how to decompose complicated physical motions to make motion more interpretable and easier to learn for humans
- Build a teaching environment in a virtual environment (VR + unity)
- Use real robot teaching frontend to demonstrate motion clips(sign language, breaststroke, butterfly, etc)

Medical Image Segmentation based on Level Set **2017 – 2019**

Advised by: Dr. Jin Liu

- Propose an MR image segmentation algorithm based on the level set algorithm to address challenges present in medical images, such as uneven gray level distribution, strong background interference, and blurred target area

Face Recognition Methods under Complex Conditions **2017 – 2019**

Advised by: Dr. Jin Liu

- Propose a cooperative representation model that integrates both global and local information to enhance the recognition accuracy of facial images under varying conditions such as changes in illumination, expressions, and occlusions in the context of single-sample face recognition

Publications

Journals

1. **Xue Wei** and Dola Saha, WISE:Waveform Independent Signal Embedding for Covert Communication, IEEE Transactions on Machine Learning in Communications and Networking.

2. Jin Liu, **Xue Wei**, Langlang Li, MR Image Segmentation Based on Level Set Method, Multimedia Tools and Applications, 79, pages11487–11502(2020).

Conferences

1. **Xue Wei**, Anushka Gupta, Aveek Dutta, Dola Saha and Gregory Hellbourg, RIS for Signal Cancellation in 3D, in IEEE International Symposium on Dynamic Spectrum Access Networks (DySPAN) 2024 (Under Review).

2. **Xue Wei** and Dola Saha, KNEW: Key Generation using NEural Networks from Wireless Channels, in N2Women Workshop ACM SIGCOMM 2023.

3. **Xue Wei**, Dola Saha, Gregory Hellbourg, Aveek Dutta, Multistage 2D DoA Estimation in Low SNR, in IEEE International Conference on Communications (ICC) 2023.

4. Zhibin Zou, **Xue Wei**, Dola Saha, Aveek Dutta, Gregory Hellbourg, SCISRS: Signal Cancellation using Intelligent Surfaces for Radio Astronomy Services, in 2022 IEEE Global Communications Conference (GLOBECOM).

5. **Xue Wei** and Dola Saha, KNEW: Key Generation using NEural Networks from Wireless Channels, in ACM Wireless Security and Machine Learning (WiseML) 2022.

6. Hesham Mohammed, **Xue Wei** and Dola Saha, Adversarial Learning for Hiding Wireless Signals, in 2021 IEEE Global Communications Conference (GLOBECOM).

7. Jin Liu, **Xue Wei**, Qi Li, Langlang Li, A Level Set Algorithm Based on Probabilistic Statistics for MR Image Segmentation, 2018 International Conference on Intelligence Science and Big Data Engineering, PP. 562.

8. Jin Liu, Langlang Li, Qi Li, **Xue Wei**, Collaborative Error Propagation for Single Sample Face Recognition, 2018 International Conference on Intelligence Science and Big Data Engineering, PP. 332.

Teaching Experience

IECE 111 - Introduction to ECE, Teaching Assistant — Spring 2022
IECE 141 - Introduction to Programming, Teaching Assistant — Spring 2022
IECE 110 - Introduction to Engineering, Teaching Assistant — Fall 2021,Fall 2020
IECE 553 - Cyber-Physical Systems, Teaching Assistant — Fall 2021
IECE 371 - Signals and Systems, Teaching Assistant — Fall 2020
Responsibilities: Graded, Conducted Laboratory Classes

TECHNICAL SKILLS

Languages: C, C++, MATLAB, Python, Julia
Expertise: Wireless Communications Systems, OFDM, Machine Learning
Platforms: PyTorch, Robot Operating System (ROS)

Coursework

- Probability and Random Process
- Robotics
- Cyber-Physical Systems
- Linear Control Theory
- Adv Digital Communications
- Modern Wireless Networks
- Info Theory, Infrnce, Mach Lrn
- Advanced Electronic Circuits

Awards and Honors

ACM SIGCOMM 2023 Student Travel Grant — SIGCOMM2023
ACM WiSec2022 Student Travel Grants — Wisec2022
Presidential Fellowship Award 2021 — University at Albany
Presidential Fellowship Award 2020 — University at Albany
Excellent Graduate Student — Xidian University
2017 First Class Graduate Student Scholarship — Xidian University
2016 Second Class Graduate Student Scholarship — Xidian University
2016, 2015, 2014, 2013 Third Class Scholarship — Xidian University