Ruoyan Wang

◉ Shanghai Jiao Tong University

✉ wangruoyan1018@outlook.com   ☎ (+86)133 4746 6856   ◯ ruoyan-wang

Education

Shanghai Jiao Tong University *Bachelor in Information Engineering*   *Sept 2022 – Present*
- **GPA:** 3.85/4.3   **Ranking:** 22/132 (*undergraduate transcript* ⬈)
- **Coursework:** Embedded System and Interface Technology, Computer network, Microwave Technology, Principles of Communications, Electronic circuits, Principles Wireless Communication and Mobile Networks

Research Interests

My primary research interest is **Wireless Communication and Sensing**, particularly on mmWave Sensing, Backscatter Communication, and Metasurface Technology.

Experience

Spatially Selective Radar Backscatter Communication   *Aug 2024 - Aug 2025*
Instructor: Haiming Jin, School of Computer Science, SJTU

This work has been submitted to the 32nd Annual International Conference on Mobile Computing and Networking (MobiCom 2026), with me as the second student author. *submission version* ⬈
- Participated in designing the synchronous operation mode of multiple tags for the Serena system.
- Designed and implemented the sync-control board prototype with nRF52832 (sync radio) and STM32L4 (MCU), optimizing low-power performance.
- Collaborated in building the 24GHz FMCW-compatible m-tag system, integrating the sync-control board with RF switch and antennas.

Tangential Velocity Measurement with Low-Cost mmWave Radar Assisted with Metasurface   *Mar 2025 - Present*
Instructor: Haiming Jin, School of Computer Science, SJTU

This work has been accepted by the 2nd International Workshop on Radio Frequency (RF) Computing (RFCom 2025), with me as the first author. *final version* ⬈
- Proposed ***MultiFusion***, a hardware-software co-designed system to enable tangential velocity measurement for low-cost 77–81 GHz mmWave radars, addressing the deficiency of existing radars that only measure radial velocity and improving trajectory prediction accuracy.
- Designed a **software framework** leveraging multipath signals: it identifies multipath signals via dynamic/static point cloud separation, estimates angles using range information (mitigating limited angular resolution), and fuses direct/multipath velocity components to calculate full velocity vectors.
- Developed a **passive reflective metasurface**: with elaborated meta-atom geometry and a codebook ensuring uniform wide-angle energy distribution and incident-angle-invariant radiation, it enhances backscatter without prior environmental knowledge or reconfiguration.

Honors and Awards

The 2023 University Physics Competition *Silver Medal Winner*   *Nov 2023*
The 39th National Physics Competition for College Students *Second Prize*   *Dec 2023*
Undergraduate Scholarship *Grade C*   *Nov 2024*

Technologies

Programming Languages: C++, C, python, Matlab
Technologies: Altium Designer, Ansys HFSS, AutoCAD, Lidar and mmWave radar