

JUNJIE WU

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EDUCATION

M.Eng., Information and Communication Engineering

Beihang University GPA: 3.48/4.0

Sep. 2020 - June 2023

Beijing, China

B.Eng., Information Engineering

Nanjing University of Aeronautics and Astronautics

Sep. 2016 - June 2020

Nanjing, China

WORK EXPERIENCE

Wireless communication engineer

Shrong Energy Technology Co., Ltd.

Jan. 2024 - Present

Beijing, China

My work involves the simulation and analysis of physical layer links in **Non-Terrestrial Networks (NTN)**. I also explore emerging 6G technologies, including **Reconfigurable Intelligent Surfaces (RIS)** and **Integrated Sensing and Communication (ISAC)**.

PUBLICATIONS

Junjie, Wu, Qiao Li, and Yuedong Zhuo. "Analysis of WAIC QoS Guarantees Using Wireless LAN Technology." *2022 21st International Symposium on Communications and Information Technologies (ISCIT)*. IEEE, 2022. (Oral presentation)

Yuedong Zhuo, Qiao Li, Guangshan Lu, Junjie Wu. "Simulation and analysis of MIMO channel for wireless avionics intra-communications." *Acta Aeronautica et Astronautica Sinica*, 2024,45(5):328969. doi: 10.7527/S1000-6893.2023.28969(in Chinese)

Yawu Wu, Qiao Li, Tong Wang, Junjie Wu. Proportional Fair Access Method for Uplink Multi-User Clustering in WAIC Networks[J]. *Journal of Beijing University of Aeronautics and Astronautics*. doi: 10.13700/j.bh.1001-5965.2023.0607(in Chinese)

RESEARCH EXPERIENCE

Relay-based Wireless Avionics Intra-Communication(WAIC)

Sep. 2020 - June 2023

This project focused on exploring the potential of relay-based wireless avionics intra-communication (WAIC) using the IEEE 802.11 protocol. With WAIC, we aimed to replace certain components of traditional wired networks, offering advantages such as weight reduction and increased flexibility. We developed a SolidWorks channel model of the avionics compartment using **ray tracing** to simulate realistic channel conditions and fading effects. By analyzing the **delay-violation probability** and considering variable-bit-rate traffic, we assessed the transmitter's performance under different fading conditions. Furthermore, we solved the **power allocation optimization** problem of maximizing the effective capacity of a single relay node system. Based on Software-Defined Radio (SDR), we compared the measured channel state information (CSI) with the simulated results. Overall, our research aimed to provide insights into the implementation of WAIC and improve our understanding of its performance in avionic environments.

Aerial Bird Object Detection

Dec. 2019 - June 2020

This project aimed to develop a technique for bird detection using computer vision. We annotated a comprehensive dataset of bird images extracted from video frames, which included various species, poses, and backgrounds. This dataset served as the foundation for training and testing the YOLOv4 model, which we optimized for accurate and robust bird detection in aerial images using Python and Tensorflow. Through evaluation and comparison, we found that YOLOv4 achieved a significant improvement in average precision (AP), outperforming YOLOv3 by 7% in the detection of birds, particularly in challenging scenarios involving occlusion and overlapping instances.

SKILLS AND OTHERS

- Skills: Matlab, Python, C, Cpp, $\text{\LaTeX}$
- Languages: Mandarin(native), English(IELTS-6.5)