

JUNJIE WU

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EDUCATION

Beihang University, Beijing, China

M.Eng. in Information and Communication Engineering

September 2020 - June 2023

GPA: 3.48/4

Thesis Title: Research on avionics wireless LAN relay communication method

Nanjing University of Aeronautics and Astronautics, Nanjing, China

B.Eng. in Information Engineering

September 2016 - June 2020

GPA: 3.2/5

RESEARCH INTEREST

Wireless Communication, Deep Learning, Edge Computing, Communication Networks

PUBLICATIONS

- **Wu, J.**, Li, Q., & Zhuo, Y. (2022, September). Analysis of WAIC QoS guarantees using wireless LAN technology. In *2022 21st International Symposium on Communications and Information Technologies (ISCIT)* (pp. 76-81). IEEE. (Oral presentation)
- Zhuo, Y., Li, Q., Lu, G., & **Wu, J.**. Simulation and analysis of MIMO channel for wireless avionics intra-communications. *Acta Aeronautica et Astronautica Sinica*, 2024,45(5):328969 (in Chinese). doi: 10.7527/S1000-6893.2023.28969

RESEARCH EXPERIENCE

Project: Relay-based Wireless Avionics Intra-Communication(WAIC)

Sept 2020 - June 2023

- Investigated the feasibility of relay-based wireless avionics intra-communication (WAIC) using IEEE 802.11 standard.
- Developed a SolidWorks model of the avionics compartment to simulate multipath channel (ray-tracing algorithm) and fading effects.
- Analyzed the delay-violation probability performance of the transmitter under different fading conditions (flat and frequency-selective) using the effective capacity model (Stochastic Network Calculus), and explored the impact of variable-bit-rate traffic on the performance.
- Proposed a power allocation scheme to maximize the effective capacity of a single relay system (When the QoS exponent approaches infinity, the effective capacity degenerates to zero-outage capacity).
- Evaluated the performance of the WAIC system using software-defined radio, and compared the results with the simulation results.

Project: Aerial Bird Object Detection

Dec 2019 – June 2020

- Developed a comprehensive dataset of bird images from video frames, including various species, poses, and backgrounds, to serve as a foundation for training and testing the YOLOv4 model.
- Employed and optimized YOLOv4 for bird detection in aerial images using Python and Tensorflow, with a focus on improving model accuracy and robustness.
- Evaluated the performance of YOLOv4, comparing results with YOLOv3 and showed improved detection performance of YOLOv4 in the presence of occlusion and overlapping cases.

Project: Localization of fundus macular lesions

June 2019 – June 2020

- Utilized traditional image processing techniques to extract blood vessels from fundus images and localize the macular region using a template-matching algorithm.
- Developed and trained a Gradient Boosting Machine classifier to classify lesion images, demonstrating good robustness across different datasets.

HONORS AND AWARDS

- **The Second Price Scholarship**, BUAA, 2021/2022
- **The Third Prize Academic Scholarship**, NUAA, 2017/2018/2019
- **The Third Prize in the National Undergraduate Embedded Chip and System Design Competition**, 2018
- **Outstanding Volunteers**, NUAA, 2018/2019

SKILLS AND OTHERS

- Programming: Matlab, Python, C, C++, LaTeX, Tensorflow, SolidWorks
- Languages: Mandarin(native), English(fluent)