

Dongyu Wei

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EDUCATION

University of Miami, Coral Gables | Miami, FL, United States

Aug.2024- Present

Doctor of Philosophy: Electrical and Computer Engineering.

Advisor: Dr. Mingzhe Chen

University of Washington, Seattle | Seattle, WA, United States

Sep.2022- Jun.2024

Master of Science: Electrical and Computer Engineering. **GPA(Overall):**3.73/4.0 **GPA(Major):** 3.95/4.0

Huazhong University of Science and Technology | Wuhan, China

Sep.2018- Jun.2022

Bachelor of Engineering: Electronic Information Engineering. **GPA(Overall):**3.89/4.0 **GPA(Major):** 3.98/4.0

Awards: Scholarship for Excellent Students in Academic(2018, 2019)

Publications

[1] D Wei, L Cao, L Zhang, X Gao and H Yin, "Optimized Non-Primary Channel Access Design in IEEE 802.11 bn", submitted to IEEE GLOBECOM 2024.

[2] X. Gao, Y. Sun, **D. Wei**, X. Xu, H. Chen, H. Yin, and S. Cui, "Learning for Semantic Knowledge Base-Guided Online Feature Transmission in Dynamic Channels", IEEE ICC 2024.

[3] D Wei, L Cao, L Zhang, X Gao and H Yin, "Non-Primary Channel Access in IEEE 802.11 UHR: Comprehensive Analysis and Evaluation", IEEE VTC 2024.

RESEARCH

Multi-BSS Simulation and Analysis on NS3

Mar.2023-Aug. 2023

Program Member, University of Washington, Advisor: Prof. Sumit Roy, Dr. Hao Yin

- ▶ Explored Bianchi's basic model and compiled the Single-BSS simulation code using NS3.
- ▶ Benchmarked the model's performance and extend to Two-BSS model simulation.
- ▶ Learned about Multi Link Operation in next generation's Wi-Fi standard and apply them in Multi-BSS simulation model.

Space Communication and Signal Processing

Mar.2023-Jun.2023

Program Member, University of Washington, Advisor: Prof. Akshay Gadre

- ▶ Received signals from NOAA satellites using the UC-1374-531R Antenna Kit as well as RTL SDR and designed codes to decode it into images.
- ▶ Wrote codes to applied homography in multiple images received by different NOAA satellites to enhance SNR and designed software to achieve coastline detection.
- ▶ Used GOES parabolic reflector antenna and NESDR SMARTEE XTR SDR receiver to detect and get the signals from GOES 16 and GOES 17 satellite by receiving and monitoring on raspberry pie.

Research on Vehicle Vision Detection Method Based on Deep Learning

Sep.2021-Jun. 2022

Research Assistant, HUST, Advisor: Prof. Li Ma

- ▶ Designed an image segmentation recognition network after analysis on the surface defect detection of the automobile manufacturing industry and popular deep learning methods.
- ▶ Compared different neural networks and performed dimensionality reduction after convolution at the front end of the FCN network, adding position-sensitive features.
- ▶ Used VOC2012 as the test set, and used Pixel Accuracy, IoU and MIoU as evaluation criteria of the model.
- ▶ Explored the limitations of the model and made plans for the prospects of relevant scenarios.

Attack on Multimodal Models

Dec.2020-Aug.2021

Research Assistant, HUST, Wuhan Optoelectronics National Laboratory, Advisor: Prof. Pan Zhou

- ▶ Explored locating first sentence in video by using top-down and bottom-up prediction methods.
- ▶ Modified approach based on backdoor attacks.
- ▶ Developed a model to achieve a work-of-art result, including making the training model intercept the wrong plot information in the attack against the training process and samples.

PROJECTS

Intel Corporation

Software Engineer (UW ENGINE Capstone) -- Seattle, WA

Jan.2023-Jun.2023

Platform Architecture Optimization using Insights from User and Processor Data

- ▶ PWA/web power consumption collection.
- ▶ Deep analysis of power consumption.
- ▶ Trend reporting and optimization insights.

Peer-to-peer Media Streaming Server Construction

Jan.2023-Mar. 2023

Team leader, University of Washington, Advisor: Prof. Akshay Gadre

- ▶ Constructed a P2P media streaming server that acts as a node to connect to all nodes in the network using Dijkstra algorithm.
- ▶ Utilized OSPF protocol for peers routing using link-state protocol.
- ▶ Implemented reliable data transfer with GO-BACK-N sliding window protocol over UDP socket.
- ▶ Developed methods that can make nodes utilize multiple thread to have packets sent to and get from peer neighbors.
- ▶ Designed URL recognition methods and assembled functions by adopting TCP sockets to get HTTP requests.
- ▶ Used Gossip protocol to build a content search method, locating media content and finding the lowest consumption way.

Vaccine Appointment Scheduling System

Nov.2022-Dec.2022

Software Backend Developer, University of Washington, Advisor: Prof. Ryan Maas

- ▶ Developed a vaccine scheduler back-end application to manage vaccine stockpiles and vaccine appointments in Java.
- ▶ Designed database schema of caregivers, patients, and vaccines, stored and managed data on Microsoft Azure.
- ▶ Implemented the functions of users' login/logout, scheduling/showing appointments, availability updates, etc.

Music recommendation system based on Spark platform

Sep.2021-Jan. 2022

Big Data Developer, Team member, HUST, Advisor: Prof. Jianwen Chen

- ▶ Wrote a crawler with Python to obtain the original data of music listening information in music software with permission.
- ▶ Chose Hbase on Spark platform to preprocess and consolidate data, based on music entry information.
- ▶ Compared the results of two collaborative filtering algorithms to reach a more complete personalized recommendation model.
- ▶ Predicted the raw music data samples and used Vue.js to display the system's front-end output.

Brick Game with Brain waves

Apr.2021-June.2021

Designer, Team leader, HUST, Advisor: Jun Gong Senior Engineer

- ▶ Wrote Python programming for a brick game, the brick was controlled by left and right keys.
- ▶ Collected brain waves data package of samples when playing the game with EEG equipment.
- ▶ Constructed CNN to train 8 types of data in every data package to generate output signal.
- ▶ Determined the left and right commands of the signal to replace the function of the left and right keys upon a standard data.
- ▶ Tested the model and the accuracy has been improved to 56%.

CloudMinds

Robotic Software Engineer Intern --Wuhan, China

Jul.2021-Aug.2021

Software development of cloud robots in digital twin scene

- ▶ Compiled blueprints for digital twin robots on HARIX RDK platform.
- ▶ Called the function modules in the blueprint, used custom services and intentions to expand robots' functions.
- ▶ Wrote aiml files to achieve one-time multiple extensions of robot functions.
- ▶ Set mark point on the map to realize mobile navigation of robots.
- ▶ Selected yoloV5 model to train the classification and identification models and deployed to the cloud through docker.

Crawler and Knowledge Graph

Sep.2020-Dec. 2020

Software Developer, Team leader, HUST, Advisor: Prof. Jiaolong Wei

- ▶ Applied proxy pool to overcome anti-crawler mechanism of *Douban* website, under the supervision of website technicians.
- ▶ Crawled thousands of movies' information with Python and stored in Redis database,
- ▶ Used SQL Server to organize data, then drew knowledge graph via Neo4j.
- ▶ Designed word frequency retrieval website by using Django.

SKILLS

- ▶ Programming languages: Java, C, C++, Python, SQL, MATLAB
- ▶ Technology Stack: NS3, Redis, Vue.js, Neo4j, yolo, Spark
- ▶ Research areas: Wireless communication, Machine learning