

Jy-Chin (Lucy) Liao

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Research Interests

EE/ECE Ph.D. program in wireless communication and signal processing.

Education

National Taiwan University (NTU)

Taipei, Taiwan

M.S. in Graduate Institute of Communication Engineering

09/2019 – 06/2021

Advisor: Prof. Char-Dir Chung

- GPA: 4.2/4.3

National Central University (NCU)

Taoyuan, Taiwan

B.S. in Department of Communication Engineering

09/2015 – 06/2019

- GPA: 86.44/100 (Rank: 3/57)
- Valedictorian of Communication Engineering Department (Rank 1 for seven semesters)

Research Experience

Advanced Communication Technology Lab, NTU

Taipei, Taiwan

Graduate Researcher

09/2019 – 06/2021

Project: GLRT-Based OFDM Demodulation with Pilot-Aided Channel Estimation

- Developed bit error rate upper bounds for the pilot-aided SIMO-OFDM employing an arbitrary two-dimensional component modulation over block-fading channels.
- Showed that the generalized likelihood ratio test (GLRT) rule of data decision is equivalent to the maximum ratio combining (MRC) rule for pilot-aided SIMO-OFDM.
- Analyzed the tightness of proposed upper bounds with Monte Carlo simulation.
- Proposed curve-fitting polynomials for optimal power allocation between data and pilot symbols.
- Applied communication standards, such as 5G NR and LTE for system coherence time and the pilot placement.

Software Defined Radio Lab, NCU

Taoyuan, Taiwan

Undergraduate Researcher

09/2017 – 06/2018

Project: LTE BCH/CRC Encoder and Tail Biting Encoder

- Combined BCH/CRC code and Tail-Biting convolutional code and implement on FPGA under 4G-LTE standard.
- Designed a user interface to input different system parameters into FPGA.
- Verified decoded results and presented data visualization through MATLAB.

Publications

1. **Jy-Chin Liao**, Wei-Chang Chen and Char-Dir Chung, "Performance Analysis of GLRT-Based SIMO-OFDM Demodulation With Pilot-Aided Channel Estimation," *IEEE Access* (under revision)
2. **Jy-Chin Liao**, "SystemVue Communication Experiments Tutorial," Keysight Technologies, pp. 1-102, Aug. 2018.

Teaching Experience

Teaching Assistant, NTU

Taipei, Taiwan

Digital Communication II

09/2020-01/2021

- Performed all assistant duties, including mentoring, grading assignments, and clerical help.
- Mentored to about 20 students, and two of them are international students from Italy.

Teaching Assistant, Harbin Institute of Technology

Harbin, China

University Support Program - 2018 Teaching and Training Camp

07/2018

- Spent one week at Harbin Institute of Technology, China, to train participants on the use of Keysight products and provide technical support regarding communication theory.

Work Experience

MediaTek Inc.

Hsinchu, Taiwan

Summer Intern

07/2021-08/2021

- Worked with team members to implement OpenAirInterface as gNB on software-defined-radio (SDR) platform (i.e., USRP) under 5G standard, and in charge of the physical uplink control channel (PUCCH) and the physical random access channel (PRACH).
- Built a test-case system to check if the added features on OAI satisfy standard requirements and function correctly.
- Analyzed experimental results and fixed problems while connecting the company's products with OAI gNB.

Qualcomm Inc.

Hsinchu, Taiwan

Interim Engineering Intern

01/2019 – 07/2019

- Developed an automated data processing system with Python to analyze the reliability testing data ensuring all the products satisfy the requirements.
- Designed a tool that produces packet qualification reports within 10 mins while traditionally taking half-day by artificial.

Keysight Technologies Inc.

Taoyuan, Taiwan

Summer Intern

07/2018 – 08/2018

- Designed communication experiments using Keysight's product, SystemVue, for customers.
- The author of SystemVue Communication Experiments Tutorial.

Awards & Honors

1st place, MediaTek Core Value Workshop

2021

Valedictorian of Communication Engineering Department, NCU

2019

Honorable Mention, Independent Study Competition, NCU Communication Engineering

2018

Exchange student at National Tsing Hua University (Top 3% in Dept.)

2017

Academic Achievement Award (Top 2 in Dept.), NCU

2016

Extracurricular Activities

Leader of Course Organizing Team, Wireless Communication Camp

11/2016 – 06/2017

- Trained approximately 20 students to provide academic courses to 150+ undergraduates.
- Led the team in ideas for course design through best practices and innovations in teaching.

Director, Communication Engineering Orientation Event

07/2016 – 10/2016

- Organized the event for about 80 students for three days to understand our department.
- Collaborated with external organizations and the other department leaders to form the event.

Team member, Male Golf School Team

2017-2016

Skills

Natural Languages: Mandarin (Native), English (Professional working proficiency, TOEFL 100/120)

Programming Languages: C/C++, Verilog, Python, MATLAB, LATEX