

# Jy-Chin (Lucy) Liao

10F., No.10, Ln. 135, Xianzheng 9th Rd., Zhubei City, Hsinchu County 30268, Taiwan (R.O.C.)  
lucyliao1997@gamil.com | +886-988762344

## Research Interests

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

## Education

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### 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

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### 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

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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

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### 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

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### 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

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**1<sup>st</sup> 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

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### 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**, School Golf Team

2017-2016

## Skills

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

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