

Jy-Chin (Lucy) Liao

<https://lucyjcliao.github.io>

+1 (979)-661-9026 ✉ lucy.liao@rice.edu

Education

Rice University

Texas, USA

Ph.D. in Electrical and Computer Engineering

08/2022-present

Advisor: Dr. Edward Knightly

- GPA: 4.0/4.0

National Taiwan University (NTU)

Taipei, Taiwan

M.S. in Graduate Institute of Communication Engineering

09/2019 – 06/2021

Advisor: Dr. Char-Dir Chung

- GPA: 4.21/4.3

National Central University (NCU)

Taoyuan, Taiwan

B.S. in Department of Communication Engineering

09/2015 – 06/2019

- GPA: 86.44/100
- 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.

Publication

1. **Jy-Chin Liao**, Wei-Chang Chen and Char-Dir Chung, "Performance Analysis of GLRT-Based SIMO-OFDM Demodulation With Pilot-Aided Channel Estimation," in *IEEE Systems Journal*, 2022.

Teaching Experience

Teaching Assistant, NTU

Taipei, Taiwan

Digital Communication II

09/2020-01/2021

Teaching Assistant, Harbin Institute of Technology

Harbin, China

University Support Program - 2018 Teaching and Training Camp

07/2018

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

WH Muery Scholarship, Rice

2022-2023

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, School Golf Team

2017-2016

Skills

Natural Languages: Mandarin (Native), English

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