**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 revised)
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