Jy-Chin (Lucy) Liao

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Education

Rice University *Texas, USA*

Ph.D. in Electrical and Computer Engineering *08/2022-present*

Advisor: Prof. Edward Knightly

National Taiwan University (NTU) *Taipei, Taiwan*

M.S. in Graduate Institute of Communication Engineering *09/2019 – 06/2021*

Advisor: Prof. Char-Dir Chung

- GPA: 4.21/4.3

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.

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," in *IEEE Systems Journal*, 2022.
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

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