

Yu-Chi Lin

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EDUCATION

University of California, Berkeley

August 2021 – present

- Ph.D., Electrical Engineering and Computer Sciences (EECS)
- Advisor: Prof. Ali M. Niknejad, Prof. Kristofer S. J. Pister
- Research Interests: mixed-signal IC, biomedical sensor, system-on-chip (SoC), mm-Wave IC
- Affiliations: Berkeley Wireless Research Center (BWRC), Berkeley Sensor & Actuator Center (BSAC)

National Tsing Hua University, Hsinchu, Taiwan

September 2017 – June 2021

- B.S., Electrical Engineering (EE)
- GPA: **4.23/4.3 (rank 1/102)**

PROFESSIONAL EXPERIENCE

Qualcomm Inc, Santa Clara, CA

May 2023 – August 2023

Intern

RESEARCH EXPERIENCE & PROJECT

Low Power Wireless EEG

December 2021 – present

Prof. Ali M. Niknejad, Prof. Kristofer S. J. Pister, EECS, UC Berkeley

- Designing wireless EEG for TMS-EEG-fMRI system [NIH R01MH127104]
- Designing μ V precision ADC for SC μ M-V (single-chip micro mote) with Intel 16nm finFET process
- Built prototype with off-shelf ADC (ADS1299) and SC μ M via serial peripheral interface (SPI)

65nm Tapeout Shuttle Top-Level Integration

January 2023 – April 2023

- BSAC point of contact of 65nm tapeout shuttle between TSMC
- Integrated chip top-level for research groups – Prof. Liwei Lin's lab and Prof. Kris Pister's lab

Inclinometer for Microrobotic Platforms

August 2022 – December 2022

- Designed dual-axis accelerometer-based inclinometer for sub-cm hexapod in a single mask silicon process
- Achieved 0.8m degree resolution, over 13-degree range, and less than 1% angular error

DAC-driven Transimpedance Amplifier

January 2022 – May 2022

- Designed fully differential 300 Ω -loaded transimpedance amplifier with TSMC 28nm CMOS process
- Achieved 250 Ω gain, 70dB loop gain, 9.77-bit ENOB, 700MHz BW, 4.98mW power, 4.95ns settling, and 53.7 μ V output noise, with 1V supply and 50 μ A reference current
- Stabilized CMFB between class AB output stage and folded-cascode first stage

38-mm Smartwatch Liquid-Crystal Display Driver

August 2021 – December 2021

- Drove 272 \times 340 pixels, with 1.4V light-to-dark full swing transition, sequentially at 60Hz refresh rate
- Built 2-stage op-amp with GDPK 45nm CMOS process, 1.8V and 1V power supplies, telescopic-cascode, class AB amplifier, Miller compensation, and single biasing current source

RISC-V CPU Processor

August 2021 – December 2021

- Implemented RISC-V ISA with 3-stage pipelined CPU, cache memory, and control status register (CSR)
- Designed configurable direct-mapped and 2-way set associative cache with write-back and -through policies
- Front-end Verilog design and simulation, and back-end synthesis and PAR with ASAP7 7nm process

Terahertz (THz) None-line-of-sight (NLOS) Imaging February 2020 – June 2021
Prof. Shang-Hua Yang, Yang Research Group, EE, NTHU

- Submitted proposal to **Ministry of Science and Technology (MOST)**, Taiwan
- Asynchronous optical sampling (ASOPS) Terahertz time-domain spectroscopy (THz-TDS) system

IC Lab QR Code Decoder September 2020 – January 2021

- Decoded rotated 25×25 QR code within 64×64 random-background bitmap images into URL web address
- Ranked A and won second-place in synthesis contest (over half of classmates are graduate students)
(performance index (PI) is defined as the product of total area, timing constrain, and total simulation cycles)

ASCII and utf-8 Files Encoding February 2020 – June 2020

- Achieved 70% fewer storage space for utf-8 text files with Huffman encoding scheme

MOS Fabrication February 2020 – June 2020

- Fabricated MOS from silicon wafer in Tsing Hua Lab (Class 1000, The Federal Standard 209E), highest-class cleanroom in Taiwan's academia
- Characterized MOS with carrier mobility and threshold voltage through two-probe measurement

Terahertz Curvature Sensing System June 2019 – January 2020

- Undergraduate Project Oral and Poster Presentation Competition (**rank 1/53**), EE, NTHU
- Characterized surface roughness based on THz continuous wave scattering

Full-Custom Eight Frequency Mode Clock Generator September 2019 – January 2020

- Built full-custom eight frequency mode clock divider with 0.18μm CMOS process, with three-bit half-adders, double-edged-triggered flip-flops, and True Single Phase Clock (TSPC)
- Achieved maximum operating frequency of 530MHz, at TT (25°C) corner, with 1.91mW power
- Won the performance competition with the smallest layout area consumption

Logic Design Puzzle Tetris Game January 2018 - June 2018

- Established Tetris and innovative jigsaw puzzle in Verilog HDL with Xilinx Vivado on FPGA board
- Integrated with counter, timer, keyboard, speaker, LCD, LED

TECHNICAL SKILLS

Analog Circuit Design

- Cadence, Verilog-A, ADS, Simulink, Hspice, Laker, Composer
- Analog Integrated Circuits (EE 240A) (A), Advanced Analog Integrated Circuits (EE240B) (A-)
- Integrated Circuits for Communications (EE242A) (A-)
- Analysis and Design of VLSI Analog-Digital Interface Integrated Circuits (EE240C) (B+)

Digital Circuit Design

- Verilog hardware description language (HDL), logic synthesis, logic equivalence checking, layout place and route, FPGA and ASIC design and implementation
- Introduction to Digital Design and Integrated Circuits (EECS 251A) (A+)
- Introduction to Digital Design and Integrated Circuits Lab (EECS 251LA) (A)
- Logic Design Lab (A+), IC Design Lab (A+)

Physical Electronics

- MOS silicon wafer fabrication, single mask silicon process design
- Introduction to Microelectromechanical Systems (MEMS) (EE247A) (A)
- Introduction to Solid-State Electronics Device (A+)
- Solid-state Electronics Laboratory-Semiconductor Processing (A+)

Optical System

- Terahertz (THz) photonics and applications
- Frequency-domain and time-domain THz spectroscopy, THz tomography

Biomedical Engineering

- Homunculus Man modelling, Ultrasound and MRI imaging simulation
- Psychology and Modern Life (A+), Life Science (A), Introduction to Biomedical Imaging (A)

Software Programming

- C (advanced), C++, Matlab, Python, Linux OS
- Algorithms (A+), Data Structures (A+)

SELECTED AWARDS & HONORS

ISSCC Student Travel Grant Award (STGA)	February 2022, February 2023
IEEE SSCS Next Generation Circuit Designer	February 2022
Taiwan-UC Berkeley Fellowships - top 5 UC Berkeley PhD students from Taiwan	August 2021
Dr. I-Chi Mei Memorial Medal - NTHU graduate with the highest distinction (7 out of 2000 in the class of 2021)	June 2021
Scholarship of the Outstanding Student in Engineering, Chinese Institute of Engineers - only recipient from NTHU, highest prestigious award to top 10 senior undergraduates in Taiwan	June 2021
The Memorial Scholarship to Mr. Lin Hsiung Chen - largest scale scholarship awarded to top 50 college students in Taiwan	November 2020
Shun-I Chu and Zyxel Scholarship (top 15 third-year students in NTHU)	June 2020
Presidential Award (top 2% in class), NTHU	March / October 2018, October 2019, March 2020, October 2021
Broke Games Record in 800M race, sports day, NTHU	November 2019
Overseas Exchange Scholarship, EE, NTHU - Summer Session, University of California, Berkeley, CA, US	July 2019

TEACHING EXPERIENCE

EE231002 Introduction to Programming Prof. Mi-Chang Chang, EE, NTHU - In-class computer lab tutorial for over 100 electrical engineering freshmen	September 2020 – January 2021
EECS206001 Discrete Mathematics Prof. Wing-Kai Hon, Department of Computer Science (CS), NTHU - Exams and assignments tutorial for over 250 students from different disciplines in English	September 2019 – January 2021

SELECTED EXTRACURRICULAR & LEADERSHIP

<i>Member</i> , New Student Committee, Graduate Women of Engineering (GWE), UC Berkeley	August 2022 – present
<i>Peer Advisor</i> , Visit Days, EECS, UC Berkeley	February 2022, February 2023
<i>Member</i> , Track and Field school team , NTHU	October 2018 – June 2021
<i>Member</i> , International Sports Affair Training course program, Sports Administration of Ministry of Education and Chinese Taipei Olympic Committee	April 2019 – June 2021
<i>Member</i> , Leadership in Service Program, Office of Student Affairs, NTHU	August 2019 – June 2021
<i>School Representative</i> , National Intercollegiate Athletic Games, Chinese Taipei University Sports Federation	April 2019, November 2020
<i>Staff</i> , Late Night Movie Theater, Arts Center, NTHU	January 2018 - June 2019
<i>Member</i> , Female College Students Leadership Program, Ministry of Education, Taiwan	August 2018