

NUTCHANON JARIYANURUT

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EDUCATION

National Taiwan University, Taiwan, M.S., Integrated Circuit Design and Automation, Graduate School of Advanced Technology, *GPA: 4.13/4.3* (as of now) Sep 2023 - Present
Chulalongkorn University, Thailand, B.S., Electrical Engineering, *GPA: 3.99/4.00* Aug 2019 - Jun 2023
Mahidol Wittayanusorn School, Thailand, *GPA: 4.00/4.00* May 2016 - Feb 2019

WORK/RESEARCH EXPERIENCE

High-Speed Circuits Lab *under the supervision of Prof. Tai-Cheng Lee Taipei, Taiwan*, Sep 2023 - Present

- Designing a sigma-delta modulator to drive a class-D amplifier with the aim of increasing bandwidth up to 10 MHz with the technique of multi-level output to achieve the system clock below 2 GHz while maintaining the SNR of 120 dB. Studying the effect of downsampling at the output to lower the output signal frequency, and doing the mismatch shaping. The first tapeout was done using TSMC 28nm technology.
- (Previous topic) Optimizing the power conversion efficiency of the cross-coupled rectifier for RF energy harvesting and designing the matching network for it. Using Virtuoso ADE and bridging the software to Python to automate the simulation and measurement of the research.

Novatek Microelectronics Corp. Analog Design Trainee Hsinchu, Taiwan, July 2024 - August 2024

- Designing the continuous-time linear equalizer (CTLE) circuit to compensate for the channel loss of which input signal is digital non-return-to-zero (NRZ) with a maximum frequency of 10 GHz.

Silicon Craft Technology PLC Analog Design Trainee Bangkok, Thailand, May 2022 - July 2022

- [Link]. Designing a two-stage op-amp to meet the required specifications, with Python coding to automate and accelerate the design process.
- [Report in Thai]. Designing a wireless power transfer system utilizing NFC frequency (13.56 MHz) to reach the power conversion efficiency of 70%.

PROJECTS (GRADUATE)

Final Project of the Digital Communication IC course at NTU (2024)

- Implementation and evaluation of a VLSI system for 4x4 MIMO detection using sphere decoding algorithm with depth-first search. Implementation by Verilog, and testing by Xilinx's FPGA.

Final Project of the THz Circuits and Systems course at NTU (2024)

- Designing the voltage-controlled oscillator (LC-VCO) with a center frequency of 77 GHz and a tuning range of 64.5 GHz to 79.7 GHz, and applying this module to the phase-locked loop.

Final Project of the VLSI Testing course at NTU (2024)

- Programming the code for diagnosing the single stuck-at fault in a digital circuit by implementing the algorithm from Waicukauski (1989). Implementation in C++.

PROJECTS (UNDERGRADUATE)

IC Design Mini-Projects (2022-2023)

- [Link]. Utilizing the open-source PDK of SkyWater SKY130. Verifying the results of the paper design of a supply-insensitive voltage-controlled oscillator (VCO). Editing in xschem, simulating by ngspice.
- Layouting a non-overlapping clock [Link] and a one-bit serial adder [Link] in Microwind 3 using 0.12 μm technology to meet 10 GHz spec.

Member in EIC (Robotic club in the Faculty of Engineering) (2019 - 2022)

- [Link1]. [Link2]. In the EE team, making the robot for the RoboCup 2023 @Home open platform league, designing the controller of base motors using Odrive 3.6 and Python to test and control the system. The robot received second place in the league.
- Designing a system controlling multiple sensors and multiple actuators simultaneously using FreeRTOS as a pilot model for a smart home.

SKILLS

Programming and Embedded	MATLAB, Python, VHDL/Verilog, C/C++, Linux
Circuit Design	Virtuoso ADE, Xilinx Vitis/Vivado, DC and Innovus (Digital Flow)
3D Prototyping	Fusion 360, AutoCAD

UNDERGRADUATE EXTRACURRICULAR ACTIVITIES

- Member of Academic Team, Engineering Student Committee, Chulalongkorn University (2021 - 2022)** - Organizing events such as the 2022 online faculty's job fair, in which more than 80 companies and 1600 participants were involved, and organizing the academic workshops for 18 departments of the Faculty of Engineering for 240 high school students.
- Works in Tutoring:** Writing the 400-page free-to-download book for the National Chemistry Olympiad camp in Thailand, now has over 9000 downloads. Thai Language TA at NTU from 2023-2025.
- Graphical** Adobe Illustrator, L^AT_EX, Web Design (HTML, CSS, Jekyll & Liquid)

LANGUAGE

TOEFL: 29/27/20/26 (Reading/Listening/Speaking/Writing), TOCFL (Mock Test, Listening/Reading): B2.