

Tianyi (Bruce) Chen

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Github: <https://github.com/TyBruceChen> Website: <https://tybrucechen.github.io/>

EDUCATION

University of California at Santa Barbara

Master of Science in Electrical and Computer Engineering

Santa Barbara, CA, USA

09/2025 - Current

- GPA: 3.80/4

- Relevant Courses: Tensor Computing, Advanced Control Lab Design, ML Design & Test Part A

Northern Arizona University

Bachelor of Science in Computer Engineering

Flagstaff, AZ, USA

09/2020 - 06/2024

- GPA: 3.97/4 (**Summa Cum Laude**)

- Relevant Courses: Artificial Intelligence, Capstone Design, Electric Drives, Web Programming

Chongqing University of Posts and Telecommunications

Bachelor of Science in Electronic and Information Engineering

Chongqing, China

09/2020 - 06/2024

- GPA: 3.14/4

- Relevant Courses: Fundamentals of Electronic Circuit, Fundamentals of Computer Engineering, Probability and Mathematical Statistics, Data Structure, Java Programming, etc

PUBLICATIONS ([Google Scholar](#))

1. Tuy Tan Nguyen, **Tianyi Chen**, et al. "A Highly Secure and Accurate System for COVID-19 Diagnosis from Chest X-Ray Images," 67th IEEE International Midwest Symposium on Circuits and Systems (MWSCAS 2024), Springfield, MA, 11–14 Aug. 2024. ([Flagship Conference Published](#))
2. **Tianyi Chen**, Quoc Bao Phan, Tuy Tan Nguyen, et al. "A Vision Transformer Machine Learning Model for COVID-19 Diagnosis Using Chest X-Ray Images," Healthcare Analytics, vol. 5, pp. 100332, Jun. 2024. ([Journal Link](#))

PROJECTS (more at [GitHub](#))

1. PEFT on Swin Transformer by Tensor Decomposition

09/2025 - 12/2025

Decomposed the Swin Transformer model through CP decomposition during fine-tuning, where the trainable parameters have reduced from 27.52M to 45.5K with ~1.8% accuracy improvement.

2. Pendubot Upright Swing-up Control through PFL/TO and LQR

11/2025 - 12/2025

Control the pendubot's shoulder joint to swing its two arms upright by PFL/TO and keep stable by LQR.

3. SwinJSCC-based Image Compression and Transmission on LEO Satellite

12/2024 - 06/2025

Utilizes the PPO algorithm to control the joint-source-channel-coding with the SwinJSCC model and transmission on the simulated LEO2Ground channel, which includes several losses and fading.

4. FPGA-based Alarm System Design Competition (Third Prize)

10/2022 - 12/2022

Programmed the Intel Cyclone-V FPGA and ESP8266 board to build a temperature/light-sensitive alarm system with on-board buttons and LEDs, which can also be accessed and controlled remotely.

INTERNSHIP

Digital Systems Design Laboratory, Northern Arizona University

Flagstaff, USA

Research Assistant

11/2023 - 05/2024

Researched on the COVID-19 Chest X-ray image classification with all types of SOTA vision models and analysis methods, including GradCAM with R packages for online demonstration, and proposed the modified Vision Transformer model with 95.79% accuracy. Kyber cryptography is implemented later for image transmission. Two papers were published based on research.