

# ZIYUAN CHEN

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## EDUCATION

**Electrical and Computer Engineering**, ZJU-UIUC Institute, Zhejiang University September 2020 till now  
GPA: 3.885/4.000, Major-wide ranking: 7/60

## SKILLS

**Languages** Python (skilled), C (skilled), C++ (familiar), Shell (familiar), Markdown (familiar), T<sub>E</sub>X(skilled)  
**Libraries** pandas, pytorch, pytorch-lightning, pl-bolts, scipy, sympy, sklearn  
**Courses** **Major required:** ECE220 (Computer Systems & Programming), CS225 (Data Structure);  
**Self-learned:** Stanford CS231n (CNN), *Dive into Deep Learning*, Deep Learning with MATLAB;  
Work as the Teaching Assistant of ECE120 (Introduction to Computing) in Spring 2022.  
**English** TOEFL (112/120), CET4 (630/710), CET6 (668/710)  
**Soft Skills** Art and music composition, PowerPoint designing, self-learning, leadership, accountability

## PROJECTS

**Project 1** Self-Supervised Learning for Semantic Segmentation on 3D Teeth Models (Python)  
Supervisor: LIU Zuozhu *Member, IEEE* Co-authors: CHEN Zhirong, LIANG Weijie

- **Data Augmentation:** Preprocess 3D point cloud using `trimesh`, aggregate into small patches
- **Self-Supervised Training:** Bootstrap Your Own Latent (BYOL), Point-MAE (Masked Autoencoder)
- **Fine Tuning:** Refine model parameters with a small amount of manually labeled data

**Project 2** (MCM2022) Price Prediction and Investment Decision Model for Gold and Bitcoin (Python) [Paper](#)  
Supervisor: Thomas HONOLD Co-authors: CHEN Zhirong, MA Zicheng

- **Prediction:** Time Series Analysis, Gray Model (short-term), Multi-Layer Perceptron (long-term)
- **Decision:** Modified Capital Asset Pricing Model (two factors), Linear Programming (one factor)
- **Evaluation:** Model the investors with “vision” and “risk tolerance” traits; sensitivity analysis
- **Result:** GM past-data fitting + MLP moving-window fitting for prediction, Modified CAPM for decision

**Project 3** Fibonacci-Heap-Based Medical Registration and Patient Management System (C++) [Code](#)  
Supervisor: Klaus-Dieter SCHEWE Co-authors: CHEN Zhirong, LIANG Weijie, CHEN Xuming

- **Input:** Retrieve patient’s personal info either from local `.csv` files or from manual inputs.
- **Upstream:** Create a fibonacci heap structure to store patient data (e.g., hospital preference).
- **Downstream:** Implement extraction to assign appointments to patients with specified priorities.
- **Output:** Generate weekly and monthly reports for user-friendly statistics and performance evaluation.

**Project 4** LC-3 Assembly Language Compiler and Stepwise Simulator (Python, under construction) [Code](#)

- **Full ISA support:** ADD, AND, NOT, LD, LDR, LDI, LEA, ST, STR, STI, BR, JMP, JSR, TRAP, RTI (coming soon)
- **Step-wise Command Decomposition:** SEXT, ALU\_ADD, ALU\_AND, setCC, loadRegister, getMemory
- **Wrapper Functions and Integrity Check:** bin2hex, hex2bin, increment, syntaxError, verify
- **Coherent Control Flow & Pretty Printout:** compileFile, loadMemory, execute, printStatus
- **Upcoming Features & Tasks:** `.asm`, `.sym`, `.obj` (binary file) support, autorun, UI refinement

**Misc Projects** Python Modeling API (adapted from *Python Mathematical Experiment and Modeling*) [Code](#)  
Image Processing Toolkit: boundary extraction, color mapping, printer script generating (to be uploaded)

## AWARDS

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- 2022 First Prize, Chinese Mathematical Competition (Zhejiang Division)
- 2021 Second-class scholarship, Zhejiang University
- 2021 Third-class scholarship, ZJU-UIUC Institute
- 2021 Dean's List, ZJU-UIUC Institute
- 2021 Outstanding Individual in Social Practice, Zhejiang University
- 2021 First Prize, Debate, National English Competition for College Students
- 2021 Second Prize, Speech, National English Competition for College Students
- 2021 Second Prize, China Universities Debate Championship (ZJU Qualification Trail)