# Yihua Liu

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## EDUCATION

**Shanghai Jiao Tong University (SJTU)**, Shanghai, China                          **Sept. 2018 – Aug. 2022**

Bachelor of Science, Electrical and Computer Engineering, Cumulative GPA: 3.23/4.0

❖ Undergraduate Research: A, Data Science: A, Microprocessor Design: A-, Linear Algebra: A-, Computer Vision: A-, Computer Architecture: A-, Advanced Embedded System: A-

**Shanghai Jiao Tong University (SJTU)**, Shanghai, China                          **Sept. 2022 – Present**

Bachelor of Master, Electronic Science and Technology, Cumulative GPA: 3.85/4.0

❖ Introduction to Engineering Numerical Analysis: A

❖ TA of ECE4810J System-on-Chip Design: Design and complete 3 FPGA labs, 3 ASIC labs, and 1 project, covering Vitis HLS, Vitis, PYNQ, MATLAB HDL Coder/Simulink, PyMTL, OpenROAD, OpenLane, Synopsys, etc.

## RESEARCH EXPERIENCES

**Design of Integrated Micro-robotic Fish**, VE490 Undergraduate Research (Prof. Xuyang Lu)   **Feb. 2021 – Apr. 2021**

Design and fabricate a microfluidic chip and channel

❖ Simulate and verify the performance of the chip by MATLAB and COMSOL Multiphysics

**Optimization of Placement and Routing in VLSI,** Research Intern (Prof. Xinfei Guo)          **May 2021 – Dec. 2021**

Pull request to DREAMPlace, deep learning toolkit-enabled VLSI placement

## SELECTED PROJECTS

**MIPS Processor Design,** VE370 Intro to Computer Organization                          **Nov. 2020**

❖ Project 2: Implement a five-stage pipeline with forwarding unit and hazard detection unit (Verilog & FPGA Demo)

❖ Project 3: Design caches both direct-mapped and 2-way-associative with write-through or write-back (Verilog)

**VS Code Sidebar Multilingual Smart Reader Extension** (vscode-covert-reader)          **Dec. 2020 – Jan. 2021**

**Gesture-Controlled Mantis Robot,** VE373 Design of Microprocessor Based Systems          **July 2021**

❖ Final Project: Build a gesture-controlled robot that can avoid obstacles using PIC32 MCU and Arduino

**Operating System Projects,** VE482 Introduction to Operating Systems                **Sept. 2021 – Dec. 2021**

❖ Project 1: mumsh shell, support redirection, pipes, quotes parsing, signals, background, error handling, etc.

❖ Project 2: lemondb multithreaded database

❖ Project 3: Minix 3.2.1 kernel lottery and EDF scheduling with keys and kernel params switching

**Early-Exit Offloading for Embedded Question Answering Applications,** ECE4730J Advanced Embedded System

Capstone Design, leader & main contributor, repo: yihuajack/ECE4730J_FA2021 (github.com)     **Oct. 2021 – Dec. 2021**

Entropy-based early-exit for PyTorch ALBERT model evaluated by SQuAD 2.0 on Jetson TX2 and VMware Bitfusion

**Intel P6-Style Out-of-Order RISC-V Processor Design,** ECE4700J Computer Architecture   **Oct. 2021 – Dec. 2021**

❖ Final Project: Implement the RV32IM ISA by SystemVerilog, verified by Vivado, including ROB and LSQ

## HONORS & AWARDS

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| Best Technology Award of Project Design in the 2019 Summer Vg100 | August 2019 |
| 2019-2020 The Excellent League Member of Shanghai Jiao Tong University | May 2020 |
| Student Development Scholarship of SJTU Joint Institute for 2019-2020 academic year | June 2020 |
| UM-SJTU Joint Institute 2020-2021 Undergraduate Excellent Scholarship | November 2021 |
| UM-SJTU Joint Institute 2022 Master's Academic Scholarship | November 2022 |

## SKILLS & CERTIFICATION

**English**: TOEFL 97 (Reading: 30/Listening: 25/Speaking: 17/Writing: 25)

**Languages**: skilled in C/C++, GTK/GLib/GObject, LaTeX, MATLAB, Python, SystemVerilog; familiar with Bash, HTML/CSS, Mathematica, SQL, JavaScript/TypeScript; basic knowledge of GNU Make/CMake, Lisp/Scheme, PostScript, Tcl, etc.

**Software**: Capture CIS, COMSOL Multiphysics, KLayout, Multisim, Vitis, Vitis HLS, Vivado, Visio, etc.

**Skills**: Git, Linux, simple driver development, any editor/IDE (JetBrains, Vim, etc), usually using Windows/WSL/Ubuntu

**Coursera**: Python for Everybody, Machine Learning, Deep Learning, DeepLearning.AI TensorFlow Developer, GANs

**Others**: Opensource Contributions, Cppreference contributor, experiences in COMAP's Mathematical Contest in Modeling (MCM2019, MCM2020, MCM2021)