Zhihao Ruan

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Education

- **University of Michigan** — Ann Arbor, MI
  Bachelor of Science in Computer Science Engineering — *May 2020*
- **University of Michigan-Shanghai Jiao Tong University Joint Institute** — Shanghai, China
  Bachelor of Science in Electrical and Computer Engineering — *June 2020*

Scholarship and Honors

"Honorable Mention" of 2017 Interdisciplinary Contest in Modeling — *April 2017*
UM-SJTU Joint Institute "Dean's List" — *Sept 2016 – June 2017*
2018 SJTU Undergraduate Excellent Scholarship — *Sept 2017 – June 2018*
2017 SJTU Undergraduate Excellent Scholarship — *Sept 2016 – June 2017*

Research Experience

- **Synthetic Health Sensor Project Group** — Ann Arbor, MI
  Interactive Sensing and Computing Lab of Prof. Alanson Sample, University of Michigan — *Jan 2019 – Present*
  - Utilizing machine learning on embedded systems to build a synthetic sensor which can detect all kinds of events in a room and predict people's health conditions.
  - Achieved building a complete embedded system with STM32 MCU and Panasonic's GridEye 8×8 IR sensor that can detect and visualize heat distribution as well as collect data in the room.

Work Experience

- **Department of Mathematics, University of Michigan** — Ann Arbor, MI
  Grader for MATH 417: Matrix Algebra — *Jan 2019 – Present*
  - Selected as grader because of an A+ performance in MATH 214: Applied Linear Algebra.
  - Assisted professor to grade all the assignments.
- **Center for Teaching and Learning, UM-SJTU Joint Institute** — Shanghai, China
  Teaching Assistant for Academic Writing II — *Mar 2018 – May 2018*
  - Assisted professor to organize group discussion and group presentation in class.
  - Helped to grade course quizzes and essays.
  - Held office hours every week to help students with writing academic essays.

Project Experience

- **3-D Realization of Game *Don't Step on White Tiles*** — Ann Arbor, MI
  EECS 373: Introduction to Embedded Systems Design, University of Michigan — *March 2019 – Present*
  - Visualized flowing black & white tiles by driving a projector with FPGA by programming VGA protocols in Verilog.
  - Built a complete menu selection user interface using SmartFusion® MCU, LCD display and Nintendo controller.
  - Achieved step detection on projected tiles with Pixy® camera.
  - Enabled sound effects using SmartFusion® MCU, Adafruit® Audio Sound Board and Dell® stereos.
- **A Gesture-Based Mouse Cursor Control System** — Shanghai, China
  Team Leader, VG 101: Introduction to Engineering, UM-SJTU Joint Institute — *June 2017 – Aug 2017*
  - Detected the motion of user's hands using MPU-9250, an inertia measurement unit.
  - Achieved data transmission between the control system and PC using an HC-06 Bluetooth transmitter.
  - Delivered three features on PC with C/C++ program and batch scripts: switching PPT slides, moving and dragging mouse cursor.

- **The 9th SJTU Freshman Innovative Mechanical Competition** Shanghai, China
  Leader of Champion Team *April 2017*
  - Designed, programmed and assembled a robot car which collected blocks and piled them up in a designate order. The project used AutoCAD, C program and STC microcontrollers.
  - Competed with other 47 teams with strategies and skills and won the championship.

Skills

C/C++, Python, MATLAB, Verilog, LaTeX.
Data structures & algorithms, computer architecture, machine learning, embedded system programming.