Pengzhi Yang

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EDUCATION

University of Electronic Science and Technology of China (UESTC) **Chengdu, China**
Yingcai Honors College (Elite School of Top 2% Student)
B. Eng. of Computer Science & Engineering ***09/2016 - 06/2020(Expected)***

- Overall GPA: 3.92/4.0

University of California, Santa Barbara (UCSB) **Santa Barbara, US**
Exchange Program in Computer Science ***03/2019 - 06/2019***

- Overall GPA: 4.0/4.0

GRE: Verbal 156/ Quantity 170/ AW 4.0
TOEFL: Reading 27/ Listening 26/ Speaking 25/ Writing 25/ Total 103

PUBLICATION

Pengzhi Yang, Jiahao Liu, Hongchun Yang, Shaoyi Wu, Baohua Teng. **Magnetic Field Energy of Two Parallel Current-carrying Straight Wires**[J]. **Physics Bulletin**. 2019(7): 9-13.

RESEARCH EXPERIENCES&ACADEMIC PROJECTS

Dartmouth Reality and Robotics Lab, Dartmouth College **Hanover, US**

Research group directed by A. P. Alberto Quattrini Li from Dartmouth College, studying topics at the intersection of computing and physical reality, including robotics, 3D fabrication, sensing and augmented reality.

Undergraduate Research Assistant, Advisor: A. P. Alberto Quattrini Li ***06/2019 - present***

- **Underwater Robot Obstacle Avoidance**
  - Trained the Fully Convolutional Residual Network (FCRN) to predict the depth information (RGBD) from a single RGB image using the NYU dataset (preprocessed according to underwater environments).
  - Trained the Dueling Double Deep Q network (D3QN) in well-designed Gazebo worlds to facilitate the robot to move efficiently and avoid obstacles.
  - Implemented and combined two mechanisms (method based on neural networks and traditional method based on a single beam distance detection) to control the underwater robot, BlueROV2 in Position Hold Mode to achieve the goal of obstacle avoidance.

Compiler for Simplified C++, UCSB **Santa Barbara, US**
Advisor: A. P. Yufei Ding ***04/2019 - 06/2019***

- Course project of Translation of Programming Languages (CS160). The 6 projects included scanner, parser, Abstract Syntax Tree (AST), type checking and code generation.
- Completed the project which comprised major components of an intact compiler for C++. All test cases parsed successfully with no errors and outputted valid X86 assembly code.
- Received a grade of **A+** for the course.

Big Data Research Center, UESTC **Chengdu, China**

Directed by Prof. Changsheng Li from UESTC, working on computer vision, machine intelligence, and pattern recognition.

Undergraduate Research Assistant, Advisor: Prof. Changsheng Li ***11/2017 - present***

- **Research on Deep Reinforcement Learning and Machine Learning**
  - Implemented typical algorithms of deep reinforcement learning (DRL) and machine learning through papers and online courses (CS231n in Stanford, CS189 in Berkeley).
  - Trained intelligent agents to play Atari games successfully using various DRL algorithms.

Academic Projects, UESTC — Chengdu, China

Undergraduate Research Assistant*, Advisor: Prof. Baohua Teng** — ***03/2018 - 01/2019

- **Research on Energy of Magnetic Field of an Ideal Physical Model**
  - Calculated the energy density distribution of magnetic field in two parallel long current-carrying straight wires based on the principle of vector synthesis of magnetic induction intensity.
  - Simulated the magnetic field distribution and total magnetic energy curves under different current directions and different wire distances, gave a reasonable and intuitive theoretical description of the problem.
  - Published the research as the **first author** on *Physics Bulletin*.

Advisor: Prof. Jianhao Hu — ***04/2018 - 07/2018***

- **Development of an Eight-Stage Pipelined MIPS Processor**
  - Implemented a 32-bit CPU based on the gate-level circuit in Verilog, containing the main parts of a fully functional pipelined CPU.
  - Devised and embedded deep pipeline into the Algorithm Logical Unit (ALU) part. Implemented optimized Fast Fourier Transform Algorithm (FFT) on the processor in the simulation environment and tested the whole project on FPGA.
  - Won **1st place** in the Efficiency Competition amongst all teams.

Team Leader*, Advisor: Senior Engineer Xiaoning Li** — ***03/2018 - 09/2018

- **An Innovative Practical Mini Catamaran**
  - Designed the catamaran in SolidWorks and 3D printed it. With infrared control, it was able to accomplish simple tasks such as water surface refuse collection.
  - Completed the business plan for the project. The project was awarded as **Excellence (top 10%)** in the **College Students Innovation and Entrepreneurship Competition** (2018) of UESTC.

Advisor: Lecturer Zhongsheng Huo — ***09/2017 - 12/2017***

- **Simulation of the Computer Mainframe Case Heat Dissipation**
  - Built a computer mainframe case in Flotherm. Adjusted the structure of the whole case and the parameters of the accessories according to thermodynamic theory and simulation results; kept the temperature of three monitored points below 90 ℃.
  - Proposed an original design of the thermal conductivity structure; the dissipation efficiency was improved.

SKILLS

- **Programming Languages:** Python, Verilog, C, C++, MATLAB.
- **Expertise:** Circuit Design (Vivado and Multisim), Robotics Tools (Gazebo, RViz, and QGroundControl), Mathematics Tools (Mathcad and MathType), Industrial Design and Simulation (Flotherm and SolidWorks), Multimedia Production (Adobe Illustrator, InDesign, Lightroom and Premier), other Software Tools (MobaXterm, Wireshark, Jupyter, and Latex).

HONORS&AWARDS

- 1st Merit Student Scholarship in UESTC (top 8%). — ***09/2018***
- 2nd Merit Student Scholarship in UESTC (top 15%). — ***09/2017, 10/2019***
- Shiqiang Scholarship (top 5%). — ***10/2018***
- Second prize of English Speech Contest in UESTC. — ***06/2018***
- Awarded Outstanding Volunteer. — ***10/2017***

OTHERS

- **Head of Weiai Volunteering Education Team**
  - Organized volunteering activities as the team leader in Zhongjiang County, Sichuan for 13 months. Was responsible for managing donation, curriculum arrangement as well as team members' accommodation in rural areas.
  - Taught students Chinese poems and history during the summer in 2017.
- **Short Internship at H.K. Insurance Company:** Drew up an insurance service plan for a specific case from the Manulife Financial Corporation in Hong Kong. Received Excellence Award and our team won **2nd place**.
- **Personal Hobbies:** Handcrafting, traveling, swimming, photography (https://500px.com/y_marcus), biking, diving (got Open Water Certificate) and movies.