

# HAOYUAN WANG

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## EDUCATION

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**University of California, Santa Cruz (UCSC)**

*Sept. 2018 - Present*

First-year Master's student

Department of Computer Engineering

**Huazhong University of Science and Technology (HUST)**

*Sept. 2013 - Jun. 2017*

Bachelor of Engineering

School of Automation

## SKILLS

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- Understanding principle of Computer Architecture, Operating Systems and Programming Language
- Good at C/C++ and Python, familiar with C++ and Golang
- Experienced in hardware, FPGA and embedded system development
- 4-year experience at Linux

## RESEARCH & PROJECTS

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**Motion Planning Acceleration using OpenCL on FPGA**

*12/2017 - 06/2018*

- Accelerator for collision detection, the most computation-intensive part in motion planning
- Accelerator is implemented on Intel Cyclone V SoC FPGA with OpenCL
- Achieved much higher efficiency than CPU

**2017 UCSD Online Project-Based Research Program in CMOS Design** *07/2017 - 08/2017*

- Completed an intensive six-week long project: Biomedical Instrumentation Amplifiers
- Participated in live lectures and weekly mentorship sessions through online platforms to design the above project based on LTSpice
- Studied principles of integrated circuit and worked on calculations to figure out the optimized parameters of the designed amplifier

**Data Cache Prefetching with Perceptron Learning**

*02/2017 - 06/2017*

- Modified MARSSx86 simulator and deployed the test of SPEC CPU 2006
- Proposed improvements of existed cache architecture

**Extract Domain Terminologies for Knowledge Graph Construction Using Domain Feature Vectors**

*08/2016 - 10/2016*

- Presented an approach to automatic domain terminology recognition and extraction using the domain feature vectors (DFVs)
- Steps: valid documents were collected with website script codes filtered to construct corpus; data preprocessing was conducted to wipe out invalid words; domain terminology was extracted by DFV model; experiments were conducted to evaluate the DFV model

**Study of Improving the Two-Dimensional Readout Method for GEM Detector** *04/2015 - 04/2016*

- Responsible for program optimization
- Conducted this project with classmates in the Department of Physics of Nankai University

- Rewrote the original program and used Python and C to greatly improve the scalability and performance of the program

**CPU Design Based on MIPS Architecture**

*05/2015 - 07/2015*

- Carried out Verilog implementation of Classic Five-Stage Pipeline MIPS CPU
- Added peripherals to make it become an available microcontroller and verified it on FPGA

**Free To Go (Hack Shanghai 2014)**

*09/2014*

- Accomplished blind navigation tasks by using image recognition algorithm and Gaode map navigation API
- Produced the hardware and implemented its functions

**ACTIVITIES**

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**Team leader, Embedded System Dev. Team of Unique Studio, HUST** *10/2013 - 10/2016*

- Developed microcontrollers including MCS-51, ARM, AVR, etc.
- Instructed team members in learning skills; organized technology sharing sessions and took charge of the team management

**Team leader, International Aerial Robotics Competition (IARC)** *09/2015 - 04/2016*

- Proposed technical plans to apply DJI Unmanned Aerial Vehicles (UAV) and Guidance platform driven by Tegra X1 and self-made baseboard in order to adapt to the environment of UAV

**”Citi Cup” Financial Innovation Application Competition**

*06/2014 - 07/2014*

- Provided back-end support for mobile app

**PUBLICATIONS**

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[1] **Haoyuan Wang** and Zhiwei Luo. Data cache prefetching with perceptron learning, arXiv:1712.00905 [cs.AR].

[2] Zhiwei Luo, **Haoyuan Wang**, Rong Xie. Extract Domain Terminologies for Knowledge Graph Construction Using Domain Feature Vectors, 2nd IEEE International Conference on Big Data Analysis (ICBDA2017), IEEE Press, 2017: 53-57

**RELEVANT COURSES**

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Advanced Parallel Process

Computer Architecture

Computer Network

Digital Circuit and Logic Design