

# Zikui Cai

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## EDUCATION

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**University of California, Riverside, Bourns College of Engineering** – Riverside, CA **Sept. 2017 – Present**  
*GPPE Program, Electrical and Computer Engineering*

- *Relevant Coursework:* Computer Vision; Computational Learning (Auditing); Data Acquisition, Instrumentation, and Process Control
- *Emphasis:* Machine Learning, Computer Vision

**Wuhan University of Technology** – Wuhan, China **Sept. 2014 – Jun. 2018**  
*Bachelor of Science, Automation*

- *Ranking:* 1/70; *GPA:* 4.13/5.0
- *Awards & Honors:* National Scholarship (2014) from Ministry of Education of the People's Republic of China; Outstanding Student (2014-2016) from Wuhan University of Technology

## PROJECT EXPERIENCE

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**Autonomous Vehicles** – UC Riverside **Aug. 2017 – Dec. 2017**  
*The aim of this project was to design and to develop autonomous vehicles that can navigate on their own.*

- Designed a system for vehicle remote controlling and image capturing using Raspberry Pi
- Processed pictures captured by cameras that are mounted on vehicles with OpenCV
- Utilized CNN model to train the vehicles to navigate on certain tracks

**Sound Synthesizer** – UC Riverside **Nov. 2017 – Dec. 2017**  
*The aim of this project was to build a synthesizer keyboard with an array of touch buttons.*

- Generated, collected, and organized ideas for the whole project
- Connected a 12-key capacitive touch sensor to Cola cans and used Arduino to monitor the touch keyboard
- Researched and gathered information on Github, open source libraries, and online references

**WeChat Web Platform** – Wuhan University of Technology **Feb. 2017 – Jun. 2017**  
*The aim of this project was to build a web platform for current students to post and to display their projects of this class for future students on WeChat.*

- Built a website using HTML, CSS, JavaScript, PHP and managed the database using MySQL
- Designed a home page and functions of the website, and developed a WeChat public account for easier access to our website

**Automatic Washing Machine** – Wuhan University of Technology **Feb. 2017 – Jun. 2017**  
*The aim of this project was to build an automatic washing machine fulfilling the function of washing and spinning with controllable time and number of loops.*

- Programmed with ladder diagram and sequential function charts to achieve the logic function of PLC
- Designed a UI for HMI, making it functional and aesthetically pleasing

## RESEARCH EXPERIENCE

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**Deep Learning Image Classification** – UC Riverside **Aug. 2017 – Dec. 2017**  
*The aim of this project was to classify images using deep neural networks.*

- Implemented and compared several different machine learning algorithms such as KNN, SVM, MLP, CNN and CapsNet with Python
- Constructed multi-layer neural networks from scratch without using machine learning libraries
- Visualized the whole learning process of the algorithm, including the change of weights and activations over time

## TECHNICAL SKILLS & INTERESTS

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- *Programming Languages:* Python, C/C++, Javascript, Matlab, HTML, CSS, Markdown
- *Libraries / Frameworks:* TensorFlow, OpenCV, Keras, Scikit-Learn, Numpy, Pandas, Matplotlib
- *Software:* Jupyter Notebook, PyCharm, AutoCAD, Altium Designer
- *Interests:* Swimming, Traveling, Cooking, Physical exercising