

# Zhijin Yang

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## Education

- Sep. 2015 - **Zhengzhou University, Zhengzhou, Henan China.**  
Present
  - Major in Computer Science.
  - Research advisors: Dr. Yangjie Cao, Dr. Cong Yang, Dr. Haichuan Ren

## Potential Interests

My project experience mainly involves computer vision, robotics, and indoor positioning technology. I'm happy to continue working in related fields. However, I have a keen learning ability when I face a new area. So I still have curiosity and passion about unfamiliar technologies and domains. I hope that I will participate in more challenging work in the future.

## Project Experience

- Mar. 2018 - **A Lower Limbs Rehabilitation System for ICU Patients.**  
Present
  - Supervised by Dr. Haichuan Ren
  - We are constructing a hardware and software system, and our robot is designed to reducing the risk of amputation due to muscle atrophy of the lower limbs during the patients' fainting. And in the software section, providing a friendly interface for doctors.
  - I work with electric and mechanical teammates to design the conduct plan, and my primary job is to visualize the status of patients to doctors and the communication between upper computer and microcontroller.

Sep. 2017 - **Device-Free Wireless Localization and Activity Recognition.**  
Feb. 2018
  - Supervised by Dr. Yangjie Cao and Dr. Cong Yang
  - We employ physical layer Channel State Information (CSI) as the indicator of activities. Using multiple transmitter-receiver links to achieve omnidirectional personnel detection near the receiver, and the LSTM network structure to train the data set.
  - I contribute to set up the experimental environment and preprocess and train data.

Feb. 2018 **MCM:The Mathematical Contest in Modeling.**
  - Supervised by Dr. Cong Yang
  - We are required to predict the numbers of native speakers and total language speakers and the geographic distributions of these languages in the next 50 years. Then propose the best solution for the location of six overseas offices of an international company.
  - My primary task is to build models and help complete the paper.(We have three people, one modelling, one programming, one writing)

- Mar. 2017 - **A Climbing Robot for Detecting Bridge Crack.**
- Sep. 2017
- Supervised by Dr. Yangjie Cao
  - We build a hardware and software system, the design of the robot inspired by the inchworm. We construct a two-legged multi-joint robot with three gaits (twist, reverse and inchworm gait). And there is a cloud platform to receive the collected data in real time.
  - I participate in robot assembly and control, the communication between the upper computer and the cloud platform.
- Dec. 2016 - **Settled in the Innovation and Entrepreneurship Base of Zhengzhou University.**
- Present
- Our team is accredited to the base and conducted the first simulation of the venture. I am the team leader.
- Jul. 2016 - **A Home Nurse Robot Based on Kaldi Speech Recognition System.**
- Dec. 2016
- Supervised by Dr. Yangjie Cao
  - Voice can control our robot. We use the open source Kaldi speech recognition system, THCHS-30 (a free Chinese corpus) as a training data set.
  - I contribute to voice recognition by Kaldi, then constructing and controlling the robot.
- Feb. 2016 - **Highway Pavement Cracks Detection.**
- Jun. 2016
- Supervised by Dr. Yangjie Cao
  - We cut out a section of road video taken from a highway maintenance vehicle and identified cracks in the pavement. Using the GPS data corresponding to the time where the frame with cracks, locate the crack in the freeway.
  - I participate in the preprocessing of training samples and test samples and generated a cascaded classifier.

## Teaching Experience

- Mar. 2017 - **Teaching Assistant, Arduino Embedded Development(773257)**, Zhengzhou University.
- Jun. 2017
- Teaching Assistant with Dr. Yangjie Cao.
  - Assist to guide experimental class.

## Patents

- Feb. 2018 **An Artificial Inchworm Climbing Robot Suitable for Truss Structures.**  
Yangjie Cao, Pengsong Duan, B Zhang, **Zhijin Yang**, Xiaochong Jiang, Yaqi Feng
- May. 2017 **A Bionic Climbing Robot Suitable for Cable Bridges.**  
Yangjie Cao, Pengsong Duan, **Zhijin Yang**, Xiaochong Jiang, Kaidong Zhao

## Skills

Languages: C/C++, Shell, Markdown,  $\LaTeX$ , HTML

Tools: OpenCV, Matlab, Arduino, Linux

## Selected Honors and Awards

- Apr. 2018 Honorable Mention in The Mathematical Contest in Modeling
- Apr. 2018 Second Prize in "Challenge Cup" National College Student Business Plan Competition
- May. 2017 Second Prize in "Challenge Cup" National College Student Curricular Academic Science and Technology Works Competition
- 2017 Merit Student of Zhengzhou University, Zhengzhou University
- 2016 and 2017 First-Class Scholarship, Zhengzhou University