Tian Zhang

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1247 W 30th ST APT 203, Los Angeles, CA, 90007

EDUCATIONAL BACKGROUND

University of Southern California, US **Aug 2017 – Present**
Master of Science, Electrical Engineering GPA: 3.92/4.0

Beihang University, China **Sept 2013 – Jun 2017**
Bachelor of Engineering, Automation Science and Electrical Engineering GPA: 3.52/4.0

Standardization Examination
GRE 320(V152+Q168) +AW 3.0

RESEARCH & PROJECT EXPERIENCE

Priced Based priority Queue, USC, ANRG **Jul 2018 – Present**

- Built and simulated the priced based priority queue system in MATLAB.
- Applied dynamic programming algorithm to find a solution about separating all input into different priority in order to optimize its cost.

Robotic Wireless Network, USC, ANRG **Mar 2018 – Jun 2018**

- Updated slave robots with a new robot version to replace the former modular.
- Tested new slave robots working performance in the robotic network.

Movie Revenue Predict and Relative Recommend System, USC, Course Project, Kaggle **Mar 2018 – May 2018**

- Collected and analyzed more than 40,000 real-world movie information as a dataset and converted to numerical value features.
- Applied PCA to extract important feature, applied semi-supervised 1NN to fill missing data.
- Trained supervised machine learning models by logistic regression, random forest, neural network, output the DNN model as the best prediction model with an average error less than 15%.
- Applied KNN to find the first n nearest movie as the recommended relatively movie.

Lower Limb Exoskeleton, Beihang University **Dec 2016 – May 2017**

- Implemented the movement detection system of exoskeleton by designing circuit and PCB board and coding in FPGA.
- Invented and simulated different gaits of exoskeleton based on human movement and different condition of recovery utility.

Deformable Snake-quadruped Robot, Beihang University **Jun 2015 – Jun 2016**

- Designed the structure of robot to be suitable for movement of both snake form and quadruped form.
- Solved automatic transformation between snake form and quadruped form by designing a docking mode in the middle of snake robot.
- Modularized snake robot chain, developed simpler robot, and possible for multiple chains to co-work and connect together.
- Deployed the robotic wireless network and implemented centralized host control system to control all snake robot chain collaborate simultaneously.
- Developed the gait of both snake movement and quadruped movement, created a new gait for quadruped robot.

Ultrasonic Wave Blind Guide Glove, Beihang University **Jan 2016 – Jun 2016**

- Built up blind guide glove system, included design structure and 3D print, PCB board design and deployed sensors network into the glove.
- Detected distance and speed of surround objectives, limited the distance detection error under 10cm by input Kalman Filter into the sensor network.
- Wrote the gesture recognition algorithm based on gyros model within the glove.
- Conducted prediction of surrounding objectives to verify if dangerous for glove user based on distance and speed.

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Wind Pendulum Control System, Beihang University **Jun 2015 – Jan 2016**

- Developed the mathematical dynamic model of wind pendulum.
- Applied different control method (PID, Kalman Filter PID, Fuzzy PID) to control the wind pendulum model in MATLAB and analyzed the movement properties.
- Established experimental platform, applied control methods, and compared experimental result with simulation result, the outcome error was under 10%.

Wireless Intragastric Capsule, Beihang University **Jul 2014 – May 2015**

- Designed the mechanical structure of the capsule robot and produced it by high quality 3D printing.
- Integrated communication system, power system, the motor control system in the capsule (smaller than a normal eraser).

INTERENSHIP EXPERIENCE

Digital China Holding Limited, Beijing, China **Jun 2016 – Sept 2016**

- Developed the interface of the instant messaging system embedded in the online marketing website
- Added functions including registration, login account, finding and adding friends, showing online friends into online marketing website.

TEACHING & EXTRACURRICULAR EXPERIENCE

Grader, USC **Aug 2018 – Present**

- Graded 70 students' homework and lab of the course – Applied Linear Algebra for Engineering.

Mentor, USC **Jan 2018 – Present**

- Guided five graduate mentees (enrolled in 18' Spring and 18' Fall) in USC Viterbi mentorship program, provided advice and assisted to solve problems about academic studies and personal life.

PATENTS

- Liang Yan, **Tian Zhang,** Juanjuan Peng, Tianyi Wang, Delong Liu, A Compact Electromagnetic Switch Driving Capsule Robot: China, 201510191144.4[P]. 2015-04-21
- Liang Yan, **Tian Zhang,** Yue Long, Hao Cheng. A Rotation Drive Docking Mechanism With Fault Tolerance Properties: China, 201610384018.5[P]. 2016-06-12

PUBLICATION

- Y. Long, J. Xiao, **T. Zhang** and H. Cheng, "Modeling and control for swing and anti-swing of a wind pendulum,"*2016 IEEE 11th Conference on Industrial Electronics and Applications (ICIEA)"*, Hefei, 2016, pp. 1978-1983.
  doi:10.1109/ICIEA.2016.7603913
- H. Cheng, J. Xiao, Y. Long and **T. Zhang**, "Wind pendulum modeling based-on improved PID algorithm," *2016 IEEE 11th Conference on Industrial Electronics and Applications (ICIEA)"*, Hefei, 2016, pp.2288-2293.
  doi:10.1109/ICIEA.2016.7603973

HONORS & AWARDS

- Master Honor Program, USC
- The First Prize of the Third Ecovacs Robot Competition (1/60), Ecovacs, Suzhou
- The Second Prize in National Undergraduate Electronic Design Contest (Top 15%)
- The Second Prize of Feng-cup Competition in Science and Technology, Beihang University
- The Excellent Students Awards (top 7%), Beihang University
- The Model Student of Academic Records (top10%), Beihang University

RESEARCH SKILLS

Research Knowledge: Machine Learning, Robotic Control, Embedded System, Sensor Network, Digital Signal Process
Software: MATLAB, SOLIDWORKS, AutoCAD, Altium Designer, ARM, Multisim, FPGA
Coding Language: C/C++, Python, Verilog