Jialiang Zhao

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The Robotics Institute, Carnegie Mellon University

Education

Carnegie Mellon University | Pittsburgh, PA — *2018 - 2020 (Expected)*
Master of Science in Robotics — The Robotics Institute, School of Computer Science

University of California, Berkeley | Berkeley, CA — *2017 - 2018*
Visiting Student, Researcher | GPA: 4.0 / 4.0 — Department of Electrical Engineering and Computer Science
Selected Coursework: Robotic Manipulation and Interaction, Artificial Intelligence, Mechatronics Design

Beijing Institute of Technology | Beijing, China — *2014 - 2018*
Bachelor of Engineering in Automatic Control | GPA: 93.5 / 100 — School of Automation
Selected Coursework: Control Theory, Machine Learning, Pattern Recognition, Circuits, Engineering Mechanics

Experience

HART Lab | EECS Department, UC Berkeley — Berkeley, CA
Undergraduate Researcher | Supervised by ***Prof. Ruzena Bajcsy*** — July, 2017 - May, 2018

- --- Built a visual tracking and motion system which enables a Baxter to mimic human behavior for HRI study with RGB-D camera.
- --- Introduced a sensorless single-contact pushing algorithm that can move an arbitrary-shaped object along an arbitrary path using.

Jiang Su Zi Jin Electronics Group, CO. LTD. — Nanjing, China
Software Engineer Intern — May, 2016- September, 2016

- --- Built drivers and analytic softwares for scientific measuring equipment (high definition distance measurement, light sensors, and gyroscopes).

National Key Lab of Intelligent Control & Complex System | School of Automation, BIT — Beijing, China
Undergraduate Researcher | Supervised by ***Prof. Hongbin Ma and Prof. Qi Gao*** — January, 2015- May, 2017

- --- Built an anti-sproofing system for facial recognition with movement detection and frame detection.
- --- Built an online samples collecting and sharing system for ML study with Python and Django, which allows people to label samples on the web and shares labeled samples based on contribution.

Academic Projects

Autonomous Tennis Ball Collecting and Serving Robot | April, 2015 - January, 2017 — Beijing Institute of Technology

- --- Achieved obstacle avoidance, target recognition and tracking using computer vision in real time on GPU platform.
- --- Achieved force control and landing position control within 2m^2 error for serving; designed a collecting & serving 2-in-1 mechanism.
- --- Built a web-based monitor and remote control interface with Python Flask; built a voice control interface with iFly dataset.

Active/Passive Upper Limb Assistive Exoskeleton | July, 2017 - April, 2018 — University of California, Berkeley

- --- Achieved optimal torque control with state estimation by Unscented Kalman Filter, which could provide force on demand in lifting; modelled dynamics with 6-axis force/torque sensor and encoders on NI DAQ platform
- --- Designed and built an active/passive mechanism (powered by servos and elastic bands) which could be easily mounted on human arms.

EmoNet - An Emotion Detection Network for Text-based Systems | January, 2017 - May, 2017 — Beijing Institute of Technology

- --- Achieved 73% top-1 accuracy (state-of-art: 65%) in text-based Chinese dialogue systems with CNN (VGG-Net with inceptions).
- --- Presented an encoding method as pre-processing step which addressed the issue with traditional methods (segmentation, keyword extraction, etc.) that could lose linguistic features.

Publications

Research Papers

- --- J. Zhao, H. Ma, J. Shi, and Y. Liu. "Introduction and Initial Exploration to an Automatic Tennis Ball Collecting Machine." *IEEE European Conference on Mobile Robotics (ECMR),* 2017 (presentation)
- --- J. Shi, H. Ma, and J. Zhao. "Web-Based Human Robot Interaction via Live Video Streaming and Voice." *International Conference on Intelligent Robotics and Applications (ICIRA)*, 2017. Lecture Notes in Computer Science, vol 10462. Springer, Cham
- --- J. Zhao, Q. Gao. "Annotation and Detection of Emotion in Text-based Dialogue Systems with CNN." arXiv:1710.00987

Patents († Under Review)

Patent of Invention, P. R. China — High-efficiency Automatic Tennis Ball Collecting Machine† — Tennis Ball Collecting & Serving Robot†
Patent of Utility, P. R. China — A ball collecting and serving two-in-one framework†
Patent of Software, P. R. China — A web-based monitoring system

Honors & Awards

Xu, Teli Fellowship of 2017, BIT — National Scholarship of 2015 and 2016 — Zhou, Liwei Fellowship of 2015, BIT
Outstanding Student of BIT for 2015-2017 — National Outstanding Youth of 2016 (*one of 15 in China*) — Outstanding Graduates of BIT, 2018
1st Prize, Siemens Cup Contest on Automation — 3rd Prize, Intel Cup Contest on Embedded System Design — Grand Prize, Century Cup on Mechatronics