Heng Zhang

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About Me

I am now a PhD student at HRII Lab at Italian Institute of Technology (IIT), supervised by Dr. Arash Ajoudani, highly-motivated in robotics with good foundations of math and programming, proficient in data modeling and analysis, and enthusiastic about computer and the corresponding interdisciplinary subject.

I'm interested in Robot Learning, Intelligent Motion Control, Computer Vision and their applications towards Artificial General Intelligence (AGI). My current research interest focuses include:

- Human-Robot Interaction (collaborative robot motion control, and drag teaching, force control);
- Imitation learning, robot learning and representation learning on robots;
- visual reasoning and the corresponding interdisciplinary directions (cognitive learning, commonsense reasoning and robotic affordances).

Education

present Nov. 2022	Robotics and Intelligent Machines, **Italian Institute of Technology (IIT)** **PhD** student in Human-Robot Interfaces and Interaction
May. 2022 Sep. 2019	College of Electronic and Information Engineering, **Tongji University (TJU)** **Master**'s Degree in Control Engineering **GPA**:4.45 **Rank**:1/25 **IELTS**:7.0
Jun. 2016 Sep. 2012	School of Automation and Engineering, **Northeast Electric Power University** **Bachelor**'s Degree in Automation **Honor**: Outstanding Undergraduate Thesis

Selected Publications

- **Variable Stiffness-based Safe Reinforcement Learning for Contact-rich Robotic Maze Exploration** [under review]
  Heng Zhang, Gokhan Solak, Gustavo J. G. Lahr, Arash Ajoudani
  IEEE-RAS International Conference on Humanoid Robots,2023
- **A Survey on Imitation Learning for Robot Manipulation** [under review]
  Heng Zhang, Xianyou Zhong*, Zhengang Huang, Yuan Zhao, Chengju Liu, Qijun Chen
  IEEE Transactions on Cognitive and Developmental Systems @ (TCDS).
- **Sensor-Free Method with BP Network to Achieve Drag Teaching on the 7-DOF Collaborative Robot** [accepted]
  Heng Zhang, Xianyou Zhong, Zhengang Huang, Chengju Liu, Qijun Chen*
  China Automation Conference 2021 @ (CAC2021).
- **Control Method, Device and Equipment of Collaborative Robot Drag Teaching Based on Motor Current** [Patents]
  Qijun Chen, **Heng Zhang**, Chengju Liu
  CN 112894821A.
- **An indoor navigation method for Pepper robot** [Patents]
  Chengju Liu, Qijun Chen, Liwen Lu, Jiayuan Du, **Heng Zhang**
  CN 113029143A.
- **Motion recognition of human skeleton based on lightweight graph convolution based on channel attention** [Patents]
  Chengju Liu, Ronghao Dang, Qijun Chen, **Heng Zhang**
  CN113111760A.
- **A text feature construction method based on Word2Vec and syntactic dependency tree** [Patents]
  Qijun Chen, Qiuchen Wang, Chengju Liu **Heng Zhang**
  CN 113111653A.

- **A depth estimation method for monocular image in complex environment based on domain adaptation** [Patents]
  Qijun Chen, Mengjiao Shen, Chengju Liu, Yuchu Lu,**Heng Zhang**
  CN 113436240A.

Honors & Awards

Scholarship	**1.**Innovation Scholarship for Outstanding Students, **2.**Second Prize Scholarship
Contests	**The First Prize** 2015 Siemens Cup National Industrial Automation Challenge, **The First prize** Intelligent robot in the 8th Science and Technology Sports Championship of Jilin Province, **The Third prize** National College Students Electronic Design Competition, JiLin
Honors	**1.**2022 Excellent Graduate 2022 of Tongji University. **2.**2022 Outstanding Graduates 2022 of Tongji University. **3.**2021 Winner of The Excellent Graduate Student, **4.**2015 Outstanding student leaders model

Work & Internships

Oct. 2020 – Jul. 2020 | Intern Algorithm Engineer @ China Railway Rolling stock Corp (CRRC), Tsingtao, China
- Dynamics modeling on the 7-DOF collaborative robot.
- Drag teaching based on a sensor-free method

Apr. 2021 – Sep. 2020 | Participant Student @ Project: High performance universal robot control platform
- Motion control of 6-DOF industrial robot in joint and Cartesian space.
- Communication configuration based on EthaerCAT.

Aug. 2019 – Jul. 2016 | Assistant Nuclear Power Plant Design Engineer @ SMNPC at China National Nuclear Corporation (CNNC)
- Instrument and Control (I&C) system design for AP1000 nuclear power plant.
- Learn design codes and specifications.

Community Service

People are always in a community whenever and wherever, serving for community makes me have the spirit of dedication & team-work, I am willing to make more contribution to the community.

Reviewer	TCDS, CAC2021,2022
TA	TA in the course of “Linear System Theory and Design”
volunteer	One-star volunteer of China Foundation for Poverty Alleviation
journalist	Student journalist in Alumni Association
class president	Serve as a class president throughout my undergraduate years