Yu Wang

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Wuhan, China

EDUCATION

Huazhong University of Science and Technology Sep 2019 - Jun 2024
Ph.D in Mechanical Engineering (GPA: 3.72/4.00) Wuhan

- Research Interests: Robot Contact Task, Imitation Learning, Dynamic System, Reinforcement Learning, Optimal Control
- Supervisor: Fangyu Peng

Huazhong University of Science and Technology Sep 2018 - Jun 2019
M.S in Mechanical Engineering Wuhan

Nanjing University of Aeronautics and Astronautics Sep 2014 - Jun 2018
B.S in Mechanical Engineering (GPA: 4.0/5.0, Top 6%) Nanjing

RESEARCH EXPERIENCE

Fusion representation of force position continuous skills and micro data search based skills generalization of robot machining (National Natural Science Foundation of China) Jan 2022 - Present

- Design and build a hardware platform for robot machining imitation learning and intelligent control research.
- Propose a robot polishing force-position coupling skill learning method based on expert demonstration.
- Propose a fast segmentation method for the machining stage.
- Propose a contact position estimation method considering the contact torque.
- Propose B-spline dynamic movement primitives to improve trajectory learning accuracy.
- Propose robot machining trajectory generalization method based on reinforcement learning and dynamic system.

CNC machining technology and equipment (National Science Fund for Distinguished Young Scholars) Sep 2018 - Dec 2021

- Analyze the chattering phenomena and characteristics in robotic milling tasks, classify the vibration states into four categories.
- Propose a chatter state identification method based on variational modal decomposition and information entropy.

SKILLS

Hardware:
UR16e, ABB IRB 6660, ATI Gamma & Onrobot HEX Force/Torque Sensor, Onrobot Sander, NAKANISHI & Jager Spindle
Software:
ROS, MATLAB, Python, C++, MuJoCo, LabVIEW

HONORS & AWARDS

Scholarship for Outstanding Doctoral Students Dec 2022
Merit Graduate Student Nov 2020
Undergraduate School-level Outstanding Graduation Design (Thesis) Jun 2018

PUBLICATIONS

Yu Wang, Chen Chen, Fangyu Peng, Zhouyi Zheng, Zhitao Gao, Rong Yan, Xiaowei Tang. "AL-ProMP: Force-relevant skills learning and generalization method for robotic polishing" [J]. Robotics and Computer-Integrated Manufacturing. 2023, 82, 102538. (IF=10.4, JCR: Q1)

Yu Wang, Mingkai Zhang, Xiaowei Tang, Fangyu Peng, Rong Yan. "A kMap optimized VMD-SVM model for milling chatter detection with an industrial robot"[J]. Journal of Intelligent Manufacturing. 2022, 33, 1483–1502. (IF=8.3, JCR: Q1, **ESI Highly Cited Paper**)

Yu Wang, Zhouyi Zheng, Chen Chen, Zezheng Wang, Zhitao Gao, Fangyu Peng, Xiaowei Tang, and Rong Yan. "Adaptive Tuning of Robotic Polishing Skills based on Force Feedback Model"[C]. 2023 IEEE International Conference on Robotics and Biomimetics (ROBIO).

Yu Wang, Chen Chen, Yong Hong, Zhouyi Zheng, Zhitao Gao, Fangyu Peng, Rong Yan, Xiaowei Tang. "PI2-BDMPs in Combination with Contact Force Model: a Robotic Polishing Skill Learning and Generalization Approach"[J]. IEEE/ASME Transactions on Mechatronics. (Under Review). (IF=6.4, JCR: Q1)

Chen Chen, ***Yu Wang***, ZhiTao Gao, FangYu Peng, XiaoWei Tang, Rong Yan, YuKui Zhang. "Intelligent learning modelbased skill learning and strategy optimization in robot grinding and polishing" [J]. Science China Technological Sciences. 2022, 65, 1957-1974. (IF=4.6, JCR: Q1)

Zhouyi Zheng, ***Yu Wang***, Chen Chen, Zhitao Gao, Fangyu Peng and Rong Yan. "Admittance Control for Robot Polishing Force Tracking Based on Reinforcement Learning"[C]. International Conference on Intelligent Robotics and Applications (ICIRA).