Jiabin Pan (潘嘉滨)

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EDUCATION BACKGROUND

Wuhan Institute of Technology　　　　　　　　　　　　　　　　*Sept 2015 – Jun 2019*

Bachelor of Mechanical and Electronic Engineering　　　　　　　　　*Wuhan, China*

Dissertation tittle: "Error Modeling and Analysis of Robot Milling Process"

Shanghai University　　　　　　　　　　　　　　　　　　　　　*Sept 2019 – Jun 2022*

Master of Mechatronic Engineering and Automation　　　　　　　　　*Shanghai, China*

Thesis: "Research on Compliant Parallel Mechanism for ICF Mirror"

PUBLICATIONS

[1] Fu, Z., **Pan, J.**, Spyrakos-Papastavridis, E., Chen, X., Li, M., 2020. A Dual Quaternion-Based Approach for Coordinate Calibration of Dual Robots in Collaborative Motion. *IEEE Robotics and Automation Letters* 5, 4086–4093. doi:10.1109/lra.2020.2988407.

[2] Fu, Z., **Pan, J.**, Spyrakos Papastavridis, E., Lin, Y.-H., Zhou, X., Chen, X., Dai, J.S., 2020. A Lie theory based dynamic parameter identification methodology for serial manipulators. *IEEE/ASME Transactions on Mechatronics* 1–12. doi:10.1109/tmech.2020.3044758.

[3] Xiong, J., Fu, Z., Chen, H., **Pan, J.**, Gao, X., Chen, X., 2020. Simulation and trajectory generation of dual-robot collaborative welding for intersecting pipes. *The International Journal of Advanced Manufacturing Technology* 111, 2231–2241. doi:10.1007/s00170-020-06124-w.

[4] **Pan, J.**, Fu, Z., et al, G-Code based off-line programming of robotic machining for trajectory generation. *International Journal of Advanced Manufacturing Technology*, (Accept).

[5] **Pan, J.**, Zhang, Y., et al, Design and analysis of flexible support module for compliant parallel mechanism. *Advances in Manufacturing*, (Under review).

RESEARCH EXPERIENCES

Coordinate Calibration of Dual Robots　　　　　　　　　　　　　*Jun 2019 – Dec 2019*

Natural Science Foundation of China

- Analyzed the kinematic model of dual robots coordinate calibration, **AXB**=**YCZ**, and established its linear equations based on dual quaternion. In the MATLAB environment, used SVD algorithm to achieve the linear equations solving.
- Built a dual robot operating platform based on 2D vision with UR3 and Cobotta robots, utilizing the MATLAB camera calibration toolbox, processed the chessboard images (experimental data) to generate calibration data sets, finished the calibration experiment verification, and analyzed the error and robustness of the proposed algorithm with the existing two methodologies.

Robot Off-line Programming   *Aug 2019 – May 2020*

Innovation Group Foundation of Hubei

- Interned at COBOT Company, based on the open-source library, RobWork, developed a robot machining software on the Linux platform, and constructed a virtual robot machining system through XML files, realized the robot machining simulation function.
- Analyzed the conversion mechanism between G-Code and robot programming language, RAPID, by extracting the tool position information in G-Code, realized the robot machining trajectory planning and offline programming post-processing, and completed the integration of the corresponding functions on the developed software platform.
- Obtained workpiece machining files (G-Code) via commercial CAD/CAM software (UG NX), performed robot machining simulation and offline programming on the developed software, and verified the generated robot program files on the RobotStudio and real robot.

Identification of Robot Dynamic Parameter   *Apr 2020 – Sept 2020*

Natural Science Foundation of China

- Based on Lie theory, analyzed two robot dynamic models, Newton Euler and Lagrange, and combine with ADAMS simulation, completed the MATLAB code verification on multiple robots (UR5e, Rokae xMate, Baxter).
- Utilized LMI (Linear Matrix Inequality) and SDP (Semi-definite Programming) technology to solve the equation of the robot dynamic, collected calibration data sets on the 7-DOF Rokae xMate robot, achieved the dynamic parameters calibration.
- Worked with the tutor, completed the paper writing and submission, and successfully published the paper on IEEE-ASME T MECH.

SKILLS & INTERESTS:

- Computer Skills: Qt, Adams, Ansys Workbench, LaTex.
- Programming: MATLAB, C/C++, Python.
- Technology, Interests: Robot trajectory planning, Robotic interaction control, Machine learning and deep learning.