Yanshu Song

Objective: PhD Position

Birth: Oct 12, 1995
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Location: ShenZhen, China

EDUCATION

Harbin Institute of Technology Shenzhen (GPA: 86/100) 2017.9 - Now
Master's Degree of Mechanical Engineering Shenzhen, China

Harbin Institute of Technology (GPA: 76.2/100) 2013.9 - 2017.7
Bachelor's Degree of Mechanical Engineering Harbin, China

HONORS

First-class ***scholarship of Harbin Institute of Technology*** 2019, Shenzhen
International Runner-up of ***ICRA 2018 DJI RoboMaster AI Challenge*** [2nd /48 teams] 2018.5, Brisbane, Australia
Best Engineering Award of ***ABU Robocon 2015*** [Top 8 /32 teams] 2015.6, Shandong
National 2nd & Provincial 1st prize of ***National High School Physics League*** [2% /2000+] 2013.10, Harbin
National 2nd & Provincial 1st prize of ***National High School Mathematics League*** [2% /2000+] 2013.9, Harbin
National 3rd & Provincial 2nd prize of ***National High School Biology League*** [10% /2000+] 2012.8, Harbin

PUBLICATIONS

[1] **Song, Y. S.**, Huang, H. L., Liu, F., Xi, F. F.*, and Li, B.*, 2019. "Torque Estimation for Robotic Joint With Harmonic Reducer Based on Deformation Calibration". ***IEEE Sensors Journal.*** *(Q1-Accept, subject to minor changes)* [PDF]
[2] **Song, Y. S.**, Zhang, T. S., Li, B.*, 2018. "A Virtual Experiment Platform for 2D Robot Autonomous Navigation Algorithm System". ***IEEE International Conference on Information and Automation.*** pp.989-994. [PDF]
[3] **Song, Y. S.**, Wu, J. H., and Huang, H. L.*, 2019. "A Novel Heavy-Load Nursing Robotic Arm - Design and Safety Control Based on Tactile Skin". ***IEEE International Conference on Robotics and Biomimetics.*** *(Under review)* [PDF]
[4] Li, B., Wu, J. H., Huang, H. L., **Song, Y. S.**, Liu, F., Ning, Y. H., and Chen, J. A., 2018. "A Novel Kind of 6-DOF Bionic Manipulator Arm". ***C.N. Patent No. 201811515893.8.*** [PDF]
[5] Li, B., Wu, J. H., Liu, F., Xu, W. F., Huang, H. L., **Song, Y. S.**, and Liang, J. L., 2018. "A Novel Kind of Double-arm Robot for Nursing Tasks". ***C.N. Patent No. 201811515894.2.*** [PDF]

MAIN PROJECTS

[Details of all of my projects]

Research on Safety Control Algorithms for a Heavy-Load Manipulator 2018.6 - Now
- Designed and manufactured a ***6 DOF heavy-load manipulator*** **with novel structure**;
- Proposed ***a new kind of tactile robotic skin*** and ***a safety control strategy*** based on it *(Submitted one paper)*; [Video]
- Proposed ***two novel torque estimation methods*** for robotic joint (*Submitted one paper*); [Code]
- Proposed ***a novel fusion method of impedance control algorithms***.

Cooperative Robots with Autonomous Navigation, Recognition and Decision Systems 2017.9 - 2018.5
- Implemented ***the autonomous localization and navigation system*** for two cooperative robots; [Video] [Code]
- Realized ***a real-time detecting and tracking system*** based on YOLOv2; [Code]
- Proposed ***a novel simulation platform*** for 2D autonomous navigation system (*Submitted one paper*); [Code]
- Proposed ***an autonomous decision-making system*** for the two cooperative robots. [Code]

Research on FDM 3D Printer & Chocolate 3D Printer 2015.9 - 2017.6
- Designed and manufactured ***a FDM 3D printer with printing accuracy up to 0.1mm***;
- Proposed ***a novel extrusion and heating system*** specialized for chocolate printing;
- Co-founded ***a startup*** and designed a ***3D printing training center*** for a vocational school. [Pictures]

INTERNSHIP & EXCHANGE

Robotics Robotics Ltd. (PI Electronics H.K Ltd.) 2017.7 - 2017.8, Shenzhen & H.K.
- Designed the motion control system of an automatic production line based on CAN-open. Assistant Engineer

Korea Advanced Institute of Science and Technology (KAIST) 2016.7 - 2016.8, Korea
- Contributed to the design of a robotic system for automotive paint spraying. International Summer School

MAIN SKILLS

Mechanics: Mechanical Design, Kinematics and Dynamics Modeling, Tools (***SW, CAD, ANSYS, Adams***).
Hardware: PCB Design (***Altium Designer***), Microprocessor Programming (***STM32, Arduino, Jetson TX2***).
Control: Common Control Algorithms (PID, Disturbance observer, Impedance control), Tool (***Simulink***).
Algorithm: Laser-based navigation, Neural Network (RBF, BP), Filter, Tools (***C++, Python, OpenCV***).