# Yanshu Song

*Objective: Ph.D Position*

Birth: Oct 12 1995
Location: Shenzhen, China
E-mail: Danielsong007@gmail.com
Current research: ***Robotics & Sensors***
Future research interests: ***Robotics & 3D Vision***

## 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: 75.2/100)** 2013.9 - 2017.7
Bachelor's Degree of Mechanical Engineering Harbin, China

## HONORS

First-class ***scholarship of Harbin Institute of Technology*** 2018.9 - Now, China
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, China
National 2nd & Provincial 1st prize of ***National High School Physics League*** [2% /2000+] 2013.10, China
National 2nd & Provincial 1st prize of ***National High School Mathematics League*** [2% /2000+] 2013.9, China
National 3rd & Provincial 2nd prize of ***National High School Biology League*** [10% /2000+] 2012.8, China

## 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.*** *(Accepted)* [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]

## INTERNSHIP EXPERIENCE

**Robotics Robotics Ltd. (PI Electronics H.K Ltd.)** 2017.7 - 2017.9, Shenzhen & H.K.
- Designed and realized ***a motion control system*** for one of their automatic production lines. Assistant Engineer

**Korea Advanced Institute of Science and Technology (KAIST)** 2016.7 - 2016.8, Korea
- Designed ***a novel 6-DOF manipulator*** for automotive automatic painting *(Laboratory version).* Summer School

## MAIN PROJECTS & SKILLS

[Details of all of my projects]

**Research on Safety Control of Man-Machine Cooperation of Manipulator** 2018.6 - Now
- Designed and manufactured ***a novel 6-DOF heavy-load manipulator*** *(Bearing capacity: 50kg);*
- 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
- Designed and realized ***an autonomous navigation system*** for the robots *(Localization accuracy: 3cm);* [Video] [Code]
- Designed and 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 ***a novel autonomous decision-making system*** for the two cooperative robots *(Won the runner-up).* [Code]

**Research on FDM 3D Printer & Chocolate 3D Printer** 2015.9 - 2017.6
- Designed and manufactured ***a high-precision FDM 3D printer*** *(Printing accuracy: 0.1mm);*
- Proposed ***a novel extrusion and heating system*** specialized for chocolate printing *(Plugging rate: less than 2%);*
- Co-founded ***a startup*** and co-created a ***3D printing training center***. [Pictures]

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**Design (self-assessment):** Solidworks (90), CAD (90), Adams (80); Altium Designer (80).
**Programming (self-assessment):** Python (90), C++ (80); ROS (80), Microprocessor (STM32: 80).
**English Level:** IELTS 6.5 (Listening 6.0, Reading 7.5, Writing 6.0, Speaking 5.5).