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# Mingshan He

## EDUCATION

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**Northeastern University**  
Research Assistant in State Key Laboratory

2021-present  
Shenyang, China

**Northeastern University**  
B.S. in Robotic Engineering, GPA:84.24/100 (Rank: 15/64)

July. 2021  
Shenyang, China

## RESEARCH EXPERIENCE

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### **Robot Control System Development**

2021 - 2022

*Research Assistant*      *State Key Laboratory of Synthetical Automation for Process Industries*

- Learned the communication between Low-level servo drivers and host computer in Ethercat and CAN.
- Self defined and tested ros controllers in ‘ros control’ framework.

### **Dual-Mode Teleoperation with Variable Admittance Control**

2020-2021

*Undergraduate Student Research Assistant*      *NEU Human Robot Collaborate Lab*

- Designed and developed an innovative teleoperating framework with 2 IMU sensors and a robotic arm manipulator.
- Researched control algorithms for a robotic arm manipulator with variable admittance control.

### **Multi-mode Control Technologies of Exoskeleton Robot**

Undergraduate Thesis

*Undergraduate Student Research Assistant*      *NEU Human Robot Collaborate Lab*

- Developed robot hardware interface module with ROS2 Framework in real-time control.
- Designed and developed the compliant control algorithm on this robot to enhance the human machine collaboration ability.

### **Hybrid Robot for Following and Grasping project**

Course Design

*Group Leader*      *Faculty of Robot Science and Engineering*

- Designed and developed a control system for hybrid robot (6-DoF Robotic Arm and Mobile Platform) to follow the target and grasp it.

## AWARDS AND HONORS

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2021	“Best Individual”, Cambridge University Winter Camp
2021	“Best Group”, Cambridge University Winter Camp
2021	“First Class Scholarship”, Northeastern University
2020	“First Prize”, National Robot Competition
2020	“First Prize”, National Marine Vehicle Design and Manufacture Competition
2020	“Meritorious Winner”, Mathematical Contest in Modeling(MCM/ICM)
2020	“First Class Scholarship”, Northeastern University
2019	“Third Prize”, National Mathematics Competition
2019	“Second Class Scholarship”, Northeastern University
2018	“Second Class Scholarship”, Northeastern University
2017	“Third Prize”, The 33th National Physics Competition

## SERVICES

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### **Chinese Association of Automation**

2021-present

- Member

Beijing, China

### **Korean-Chinese College Students of Federation**

2017-2019

- Vice President

Shenyang, China

## LANGUAGES & SKILLS

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- Chinese (native), Korean (native), English (fluent)
- MATLAB, C/C++, Python, HTML
- Robotic softwares (ROS, Coppeliassim, MuJoCo), CAD/CAE softwares (Solidworks, Auto CAD), PCB software (Altium Design), OpenCV, Docker, MicroControl Chips(STM32, Arduino)
- L<sup>A</sup>T<sub>E</sub>X, Microsoft Office, Ubuntu, MAC, Windows

## SELECTED PUBLICATIONS

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### Patents

1. Experimental device for teaching mechanical engineering 2018

### Conference

1. Adaptive impedance control of lower exoskeleton based on gait classification CCC(Accepted)
2. Dual-Mode Teleoperation with Variable Admittance Control ICRA(Rejected)

## FIELD OF INTEREST

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Robotic perception, Compliant Control, Adaptive Control, Optimal Control, 3D reconstruction, DIY for Hardware with SolidWorks and Altium Design.

## TEACHING & ADVISING

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[A047619] Mobile Robot Control Experiment  
Undergraduate Elective Major

*Spring 2022*  
*Teaching Assistant*

**Undergraduate Thesis Program**  
*Chair / Co-chair*

- Boyang Zhang (B.Eng. in Robotics Engineering) 2022