

# Huijie ZHANG

GRADUATE STUDENT IN UNIVERSITY OF MICHIGAN, ANN ARBOR

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## Education

### Huazhong University of Science and Technology (HUST)

Wuhan, China

B.S. IN MECHANICAL ENGINEERING

Sep.2016 - Jun.2020

- GPA:3.9/4.0 (90.06/100)
- Core Modules: Calculus, Linear Algebra, Probability Theory, Theory of Machines and Mechanisms, Machine Design, Principles of Microcomputer, etc.

### University of Michigan, Ann Arbor (Umich)

Ann Arbor, U.S.

M.S.E IN MECHANICAL ENGINEERING

Sep.2020 - Dec.2022(Expected)

- GPA:4.0/4.0
- Core Modules: Linear Systems Theory, Robotics Operating System, Robot Kinematics and Dynamics, Robotic manipulation

### University of Michigan, Ann Arbor (Umich)

Ann Arbor, U.S.

(DUAL DEGREE) M.S.E IN ELECTRICAL AND COMPUTER ENGINEERING

Jan.2021 - Dec.2022(Expected)

- GPA:4.0/4.0
- Core Modules: Probability and Random Process, Computer Vision, Machine Learning, Reinforcement Learning

## Publications

### CONFERENCE PROCEEDINGS

#### ProgressLabeller: Visual Data Stream Annotation for Training Object-Centric 3D Perception

Xiaotong Chen, **Zhang, Huijie**, Zeren Yu, Stanley Lewis, Odest Chadwicke Jenkins

European Conference on Computer Vision 2022 (ECCV 2022)

URL: <https://arxiv.org/pdf/2203.03890.pdf>

Tel-Aviv, Israel  
2022

#### ClearPose: Large-scale Transparent Object Dataset and Benchmark

Xiaotong Chen, **Zhang, Huijie**, Zeren Yu, Anthony Opipari, Odest Chadwicke Jenkins

The 2022 IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS 2022)

URL: <https://arxiv.org/pdf/2203.00283.pdf>

Kyoto, Japan  
2022

## Research Experience

### Clearpose: Large-scale Transparent Object Dataset and Benchmark

Ann Arbor, U.S.

RESEARCHER, ADVISED BY PROF. CHAD JENKINS, UNIVERSITY OF MICHIGAN, ANN ARBOR

Dec. 2021 - Mar. 2022

- Publish on **ECCV 2022**;
- The first large scale real-world household transparent object dataset with pose annotation. Contain 63 objects, around 0.3M images and 3M instance poses.;
- The First benchmark comparing 6D pose estimation on transparent objects;

### ProgressLabeller: Visual Data Stream Annotation for Training Object-Centric 3D Perception

Ann Arbor, U.S.

RESEARCHER, ADVISED BY PROF. CHAD JENKINS, UNIVERSITY OF MICHIGAN, ANN ARBOR

Jun. 2021 - Mar. 2022

- Publish on **IROS 2022**;
- The First 3D household object pose annotation tools that is able to annotate transparent objects;
- The First 3D pose annotation tools using multi-view silhouette guidance, achieving higher 3D pose accuracy than previous benchmarks;
- Implement the whole pipeline in Blender, ensure user-friendly;

### Deep reinforcement learning on Minecraft

Ann Arbor, U.S.

RESEARCHER, ADVISED BY PROF. HONGLAK LEE, UNIVERSITY OF MICHIGAN, ANN ARBOR

Jan. 2021 - Apr. 2021

- Implement Deep Q-learning from demonstration (DQFD) in Pytorch;
- Deploy DQFD on the computer game, Minecraft, exploit its potential to learn tree chopping in the game ;
- Achieve a reasonable result, 39.28 trees per iteration, compared with 64 trees per iteration for human players ;

### Intelligent mobile robot designed for tennis recognition and collection

Wuhan, China

TEAM LEADER, ADVISED BY LECTURER LING LING, HUST

Nov. 2018 - Nov. 2019

- Used laser cutting machine, lathe, miller, drill machine to process car overall frame;
- Designed a collection by sweeping the ball, to collect 1 ball per 3 seconds without damage;
- Based on Arduino, controlled the movement and ball picking of the car by PID algorithm;
- Based on Raspberry Pi, realize visual algorithms for the car through Python and OpenCV;
- Developed mobile phone software based on MIT app Inventor, remote control car operation.

## Undergraduate Research, Pneumatic soft robot module

Wuhan, China

RESEARCHER, ADVISED BY PROF. ZHIGANG WU, HUST

Jan. 2018 - Apr. 2018

- Designed the structure of soft robot that can flexibly double its cross-sectional area or double its length;
- Applied 3D printing to print the shell of the model and produced the soft robot by applying lost wax casting, optimized its manufacturing technology and raised manufacturing success rate from 30% to 80%;
- Enabled the multiple modules robot to enter narrow entrances freely, working as a pipe crawler or a pipe dredge.

## Work Experience

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### Wuhan Heavy Duty Machine Tool Group Corporation

Wuhan, China

SUMMER INTERN, TECHNOLOGICAL DESIGN

Jul. 2019 - Aug. 2019

- Set the process specifications of machine tool parts (vertical ram) as following;
- technological efficiency analysis: deleted some convex plate structures, improved parts efficiency on the premise of guaranteeing the performance;
- Decided the process route: guaranteed the straightness and flatness of parts processing;
- Used AutoCAD to draw process card.

## Skills

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**Programming** C++, MATLAB, Python (Numpy, Pytorch)

**Hardware** C51, Arduino, STM32, Raspberry pi

**Mechanical Software** ANSYS, SolidWorks, Inventor, Adams, and AutoCAD

**Certificate** NCRE (National Computer Rank Examination) Certificate of Level 2, Certificate of CAXC

**Languages** Chinese, English

## Honors & Awards

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2019 **Top 10%**, National Encouragement Scholarship

Wuhan, China

2019 **Top 10%**, China Railway Equipment Scholarship

Wuhan, China

2018 **2ed Prize**, National College Students Mechanical Innovation Design Competition

Wuhan, China

2018 **3rd Award**, Mathematical Contest in Modeling(MCM)

Wuhan, China