# HANG ZHAO

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## SELF INTRODUCTION

This is Hang Zhao, 23 years old. I am a forth-year doctoral student and now I am supervised by professor Yang Yu. My research interest is reinforcement learning (RL) and solving combinatorial optimization problems.

## EDUCATION

**Nanjing University, LAMDA Group** *June 2021 - Now*
Visiting student in Prof. Yang Yu's group

**Natinal University of Defense Technology** *June 2019 - Now*
Research Assistant in Prof. Kai Xu's group

**Linkoping University** *May 2018 - June 2018*
Exchange Student in Summer School Project.

**Beijing Institute of Technology** *September 2015 - June 2019*
B.S. in Electronic Information Engineering
GPA (overall): 88.58/100, 3.8/4.0 Rank: 3/60

## PUBLICATION

**Hang Zhao**, Yang Yu and Kai Xu. 'Learning Efficient Online 3D Bin Packing on Packing Configuration Trees', ICLR 2022.

**Hang Zhao**, Chenyang Zhu, Xin Xu, Hui Huang and Kai Xu. 'Learning Practically Feasible Policies for Online 3D Bin Packing', Science China Information Sciences.

**Hang Zhao**, Qijin She, Chenyang Zhu, Yin Yang, and Kai Xu. 'Online 3D Bin Packing with Constrained Deep Reinforcement Learning', AAAI 2021.

Lintao Zheng, Chenyang Zhu, Jiazhao Zhang, **Hang Zhao**, Hui Huang, Matthias Niessner, and Kai Xu. 'Active scene understanding via online semantic reconstruction', Computer Graphics Forum.

## RESEARCH EXPERIENCE

**LAMDA Group, Nanjing University**
**Supervisor: Prof. Yang Yu, Prof. Kai Xu**
**Project 1: Sovling online 3D BPP in continuous domain.** *June 2021 - December 2021*
*Project Leader*

· Completed the project independently, from the original idea to the submission and rebuttal of the paper.

**iGRAPE Lab, NUDT**
**Supervisor: Prof. Xin Xu, Prof. Kai Xu**
**Project 2: Packing Algorithm Improvement for Robot Implementation** *December 2020 - April 2021*
*Project Leader*

· Investigated literature related to methods for solving large-action-space problems with the RL method.
· Realized the real robot packing scene and improved the packing algorithm to adapt to the real scene.
· Completed the basic frame of the main code.
· Tested the effect of our method in a real packing scene and visualized the test data.
· Wrote and submitted the final paper and completed the rebuttal.

**Project 3: Online 3D Bin Packing Problem** *September 2019 - October 2020*
*Project Leader*

- Investigated literature related to BPP issues, formalized the online BPP into a Markov Decision Process.
- Completed the basic frame of the main code, adjusted the hyperparameters, and trained our agent.
- Made datasets of BPP, tested the effect of our method in these datasets, and compared it with baselines.
- Tested our method in simulation scenarios by V-rep.
- Rendered 3D model to get picture material and edited the video for demonstrations.
- Participated in the writing of final papers and submitted the article.

**Project 4: Indoor Navigation with DRL** *December 2018 - May 2019*
*Project Assistant*

- Investigated simulators suitable for navigation problems.
- Collected trajectory data from SUNCG scenarios to make the demonstration dataset.
- Completed the A* algorithm to calculate the optimal path as the baseline.

## AWARDS & HONORS

| | | |
|---|---|---|
| **Lindi Scholarship** | | *30,000 yuan* |
| **National Scholarship** | | *Top 2%* |
| **84781 Scholarship** | | *Top 5%* |
| **The First Prize Scholarship** | *Four times* | *Top 5%* |
| **Outstanding Graduates of Beijing** | | *Top 2%* |
| **Excellent Student Cadre** | | *Top 5%* |
| **Excellent Student** | *Three times* | *Top 10%* |
| **Outstanding Graduates** | | *Top 10%* |
| **BIT Mathematical Modeling Competition Ranking No. 1** | | *Top 0.12%* |
| **TI Cup Electronic Design Competition First Prize** | | *Top 5%* |
| **CUMCM Beijing Division First Prize** | | *Top 10%* |
| **MCM Honorable Mention** | | *Top 30%* |

## TECHNICAL STRENGTHS

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|---|---|
| **Computer Languages** | Python, Lua, LaTeX, C, C++, Matlab, Assembly language |
| **Tools** | Pycharm, VS Code, V-rep, Meshlab, Depth Exploration, Pytorch, TensorFlow2 , Adobe Premiere |

## PROFESSIONAL COURSES

Machine Learning, Computing Geometry, Computer Vision, Computer Graphics, English Scientific Paper Writing, Practice of Deep Learning Method, Artificial Intelligence, Computer Principle and Application, CPU and Assembly Language, Software Engineering, Computer Operating System, Information Theory and Encoding, Information Network Technology, Probability and Mathematical Statistics, Linear Algebra, C Language, Object-Oriented Programming, Data Structure and Algorithms Design (c++), Digital Circuit, Analog Circuit,Signals and Systems, Digital Signal Processing, Electromagnetic field theory, Random Signal Analysis.