

Site Bai

Interests: Machine Learning, Deep Learning, Reinforcement Learning, etc.

🏠 <https://best99317.github.io/SiteBai/>
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EDUCATION

- **Purdue University** Jan. 2021 – Dec. 2025 (Exp.)
Ph.D in Computer Science (Machine Learning); Advisor: Jean Honorio Grade: 3.9/4.0
- **Xi'an Jiaotong University (XJTU), Qian Xuesen College** Sep. 2016 – Jun. 2020
B.E. in Computer Science (Honors Science Program) Grade: 85.7/100; Rank: 10/32
- **Xi'an Jiaotong University, Honors Youth Program** Sep. 2014 – Sep. 2016
Preparatory after direct admission to college from middle school Grade: 86.7/100; Rank: 20/128

EXCHANGE EXPERIENCES

- **University of California, Berkeley** (International Exchange Program) Aug. 2018 – Dec. 2018
- **National University of Singapore** (Summer Workshop) Jul. 2018 – Aug. 2018

PUBLICATION

- [1] S. Bai, C. Ke, J. Honorio. **Dual Convexified Convolutional Neural Networks**, *Preprint, Under Submission*.
- [2] H. Zhang, S. Bai, X. Lan, D. Hsu, N. Zheng. **Hindsight Trust Region Policy Optimization**, *The 30th International Joint Conference on Artificial Intelligence, IJCAI 2021*.
- [3] H. Zhang, X. Lan, S. Bai, X. Zhou, Z. Tian, N. Zheng. **ROI-based Robotic Grasp Detection for Object Overlapping Scenes**, *International Conference on Intelligent Robots and Systems, IROS 2019*.
- [4] H. Zhang, X. Lan, S. Bai, L. Wan, C. Yang, N. Zheng. **A Multi-task Convolutional Neural Network for Autonomous Robotic Grasping in Object Stacking Scenes**, *International Conference on Intelligent Robots and Systems, IROS 2019*.

RESEARCH AND PROJECTS

Department of Computer Science, Purdue **Research Assistant**
Advisor: Prof. Jean Honorio

- **Deep Learning | Dual Convexified CNNs** Feb. 2022 - Jun. 2022
 - Derived a dual framework for convexified convolutional neural networks;
 - Proposed a novel algorithm to recover the convolutional weight and linear weight with the optimal dual solution and kernel function.

Institute of Artificial Intelligence and Robotics, XJTU **Research Intern**
Advisor: Prof. Xuguang Lan and Prof. Nanning Zheng

- **Deep RL | Hindsight Trust Region Policy Optimization** Jun. 2019 - Mar. 2020
 - Proposed a deep reinforcement learning algorithm to deal with the sparse reward problem in RL;
 - Studied the Hindsight method, i.e. learning across samples conditioned on different goals;
 - Introduced Hindsight to TRPO and proposed a Quadratic KL constraint to restrict variance;
 - Improved sample efficiency and success rate in sparse reward games (image input) and robot control.

- **Robot Vision | Robotic Grasping for Object Stacking Scenes** Nov. 2018 - Mar. 2019
 - Proposed a multi-task ConvNet grasping system, integrating grasp detection and visual manipulation relationship reasoning for object stacking scenes in which the grasping order matters;
 - Achieved high success rates on Baxter robot grasping a target from a pile in the right order.
- **Robot Vision | ROI-based Robotic Grasp Detection** Dec. 2017 - Jun. 2018
 - Proposed a grasp detection algorithm that extracts features from Region of Interest(ROI);
 - Achieved high accuracy detecting the grasp for a target in visually overlapped objects;
 - Contributed a multi-object grasping dataset: [Visual Manipulation Relationship Dataset](#).

School of Computing Summer Workshop, NUS

Research Intern

Advisor: Prof. Ng Teck Khim

- **Image Processing | Deep ConvNet Based Image Style Migration** Jun. 2018 - Aug. 2018
 - Transferred painting styles to photos applying VGG-19 by minimizing the distances between a white noise image to the photos and the stylized paintings; demonstrated the project in a [poster](#).

PROFESSIONAL TECHNIQUES

Programing Languages: Python, C/C++, HTML, MATLAB

Packages and Tools: Pytorch, scikit-learn, TensorFlow, Git, Linux, L^AT_EX, ROS, Gazebo, OpenAI Gym

SELECTED AWARDS

“Siyuan” Scholarship of Xi’an Jiaotong University	<i>2017, 2018</i>
National 3 rd Prize in National English Competition	<i>2018</i>
National 2 nd Prize in Undergraduate Mathematical Contest in Modeling (top 3%)	<i>2017</i>

TEACHING

- CS251 Data Structures And Algorithms, Purdue University, 2021 Fall Teaching Assistant
- CS251 Data Structures And Algorithms, Purdue University, 2022 Spring Teaching Assistant

COURSES

Purdue: Machine Learning Theory, Statistical Machine Learning, Natural Language Processing, Algorithms, Operating Systems, Introduction to Probability Theory, etc.; **Berkeley:** Artificial Intelligence, Database Systems, Machine Structure; **XJTU:** Optimization, Computer Vision, Numerical Analysis, etc.

LANGUAGE

Languages: Chinese (Native); English (Proficient)

TOEFL Total: 111. **Reading:** 30, **Listening:** 29, **Speaking:** 27, **Writing:** 25. *Feb. 24th 2019*

GRE Total: 322+4.0. **Verbal:** 153, **Quantitative:** 169, **Analytical Writing:** 4.0. *Oct. 20th 2019*