

# Yiwei Bai

ACM Class – Shanghai Jiao Tong University  
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## EDUCATION

### ACM Class, Shanghai Jiao Tong University

*Bachelor of Science, Major in Computer Science*

Shanghai

Sept 2014–June 2018

- Member of **ACM Class**, an elite CS program for **top 5%** talented students.
- Cumulative GPA: Overall: 85.7/100 | Major: 87.5/100
- Advisors: Prof. **Yong Yu**, Prof. **Weinan Zhang** and Prof. **Guirong Xue**

## PUBLICATION

### Scalable Relaxations of Sparse Packing Constraints

*Optimal Biocontrol in Predator-Prey Networks*

- Johan Bjorck, **Yiwei Bai**, Yexiang Xue, Xiaojian Wu, Mark Whitmore, Carla P. Gomes
- **Accepted By AAAI 2018**

### An Empirical Study of Collective Behaviors in Many-agent Reinforcement Learning

- Yaodong Yang\*, Lantao Yu\*, **Yiwei Bai\***, Jun Wang, Weinan Zhang, Ying Wen, Yong Yu(\* indicates equal contribution)  
CoRR abs/1709.04511(2017)
- Submitted To *AAMAS 2018*

## MANUSCRIPTS

### Deep Pseudo-Convolutional Reinforcement Learning for spatial planning problem

- **Yiwei Bai**, Johan Bjorck, Yexiang Xue, Carla P. Gomes
- Submitted To *AAMAS 2018*

## RESEARCH EXPERIENCE

### Institute for Computational Sustainability

*Visiting Research Intern*

Cornell University

June 2017–Dec 2017

- Advisor: Prof. **Carla P. Gomes**
- Learning & Utilizing Submodular Optimization on biocontrol of invasive species.
- Proposed a scalable approximation algorithm of sparse submodular optimization with Johan
- Applying Reinforcement Learning in the new CompSus field
- Proposed Deep Pseudo-Convolutional Reinforcement Learning framework for (ecological) spatial planning problem.
- Replicating AlphaGo Zero to get insights.

### APEX Lab

*Research Assistant*

Shanghai Jiao Tong University

June 2016–June 2017

- Advisors: Prof. **Weinan Zhang** and Prof. **Jun Wang**
- Learned & Utilized Reinforcement Learning in openAI environment and Focused on multi-Agent Reinforcement Learning
- Designed and Developed **Million-level Multi-Agent Reinforcement Learning Platform**, an open-source framework for large scale Multi-Agent Reinforcement Learning.
- Understand AI population with multi-agent reinforcement learning and verify the principles developed in the real world could be applied to AI population.

### Tianrang Network Technology Co.,Ltd

*Research Intern*

Shanghai

June 2016–Mar 2017

- Advisor: Prof. **Guirong Xue**
- Developed **Yi**, an AI system playing **GO(game)**
- Trained and tuned the policy network and value network
- Designed and implemented the reinforcement learning framework of the value network incorporated with policy network
- Yi won the **Fourth prize** in the first International Computer Go Competition
- Yi won the **Ninth place** in the 10th *UEC Cup*

- Organizer: Prof. **Dawn Xiaodong Song**
- Learned Courses of Deep Learning and Cyber-Security
- Participated in the Hackthon and did research in adversarial defense under black-box setting

## PROJECT EXPERIENCE

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### **ACM-2015-AI-Server**

Dec 2015

- An AI server for *Animal Chess*, used in Programming Fall 2015 AI project ACM Honored Class.

### **Five-Stage MIPS Pipeline in Verilog HDL**

Aug 2016

- Designed and implemented a five-stage pipeline for all MIPS integer operations exception co-processor instructions with forwarding optimization

### **Compiler MFChen**

May 2016

- Designed and implemented a highly functional compiler of MFChen, an language mixing C and JAVA, from *Lexical Analysis* to *Register Allocation* phase.

### **An Emperical Study of Deep Learning Toolkits on Chinese Tone Classification**

Jan 2017

- Designed the methods of preprocessing data and feature selection.
- Designed a Convolutional Neural Network model and a Deep Neural Network model.
- Implemented in tensorflow, mxnet and theano and compared the three frameworks.
- Here is the **technical report**.

## HONORS AND AWARDS

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**Gold Medal of ACM Shanghai Metropolitan Contest(17/190)**

Apr 2015

**Honorable Mention in 2016 American Mathematical Contest in Modeling(MCM)**

Jan 2016

**Academic Excellence Scholarship (2nd) of Shanghai Jiao Tong Univ. (TOP 10%)**

2015, 2016

**Zhiyuan College Honored Scholarship of Shanghai Jiao Tong Univ.**

2015, 2016

**First Prize at the NOIP(Provincial Level of China Information Olympiads)**

2013

## EXTRACURRICULAR PROJECT

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**Participated in Deep Learning Books Translation**

Apr 2016

- Led by professor **Yu Kai**.
- Yoshua Bengio, Learning Deep Architecture for AI. **Chinese edition is published**.

## SELECTED ACADEMIC PRESENTATIONS

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- Poster session of NSF SITE VISIT@Cornell: **Biocontrol of Invasive Species**
- A 15-minute presentation in reading club of Deep Learning: **Frontiers of DL for Security**
- A 30-minute presentation in reading club of Reinforcement Learning: **On-policy Prediction with Approximation**
- Invited talk in APEX lab: **From AlphaGo to Yi**

## LEADERSHIP and ACTIVITIES

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**Vice president of GO(game) Club**

Sept 2015–Apr 2016

**Co-organizer of Shanghai University Student GO Competition**

Sept 2015–Apr 2016

**Teaching assistant of CS122: Introduction to Programming Language**

Sept 2015–Jan 2016