Aijun Bai

Curriculum vitae

✍ Berkeley, CA 94720
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Experience

April 2015 — Present

Postdoctoral Researcher, UC Berkeley

Hierarchical Decision-Making and Reinforcement Learning

Developed Markovian state and action abstractions for MDPs via hierarchical Monte Carlo tree search. Worked on multi-agent reinforcement learning problems in stochastic games. Advised by Prof. Stuart Russell. Published 3 papers in **IJCAI**, **ACM Trans** and **ICAPS**.

December 2013 — March 2015

Visiting Research Scholar, CMU

Multi-Human Tracking for CoBots

Developed particle filtering over sets algorithm for multi-human tracking. Deployed implemented algorithm on CoBots — mobile service robots of CMU. Enabled CoBots to interact with humans, such as saying hello and following human. Advised by Prof. Manuela Veloso and Prof. Reid Simmons. Published 1 paper in **AAAI** symposium.

September 2009 — November 2014

Research Assistant, USTC

Hierarchical Planning for RoboCup Soccer

Worked on Markov theories (MDPs and POMDPs) based online planning and sensing under uncertainty. Developed WrightEagle soccer simulation team. Participated annual RoboCup competitions. Won 3 **World Champions** and 5 **National Champions**. Advised by Prof. Xiaoping Chen. Published 5 papers in **NIPS**, **ICAPS**, **AAMAS** and **RoboCup**.

Education

2014 **Ph.D. in Computer Science**
Univ of Sci & Tech of China

2009 **B.E. in Computer Science**
Univ of Sci & Tech of China

Qualifications

- Strong programming and software engineering abilities
- Rich **Artificial Intelligence**, **Decision-Making**, **Machine Learning** and **Robotics** experience
- Excellent interpersonal, communicating, writing and analytical skills
- Reliable, versatile, cooperative, good team member and independent worker

Technical skills

Coding	C/C++, Python, Shell, Java, SQL, LaTeX
Development	Linux/UNIX, ROS, Qt, ODPS, OpenRAVE
Knowledge	Decision-Making, Reinforcement Learning, Data Mining, Robotics

Links

Homepage	aijunbai.net
GitHub	github.com/aijunbai
LinkedIn	linkedin.com/in/aijunbai

Aijun Bai

Postdoctoral Researcher, EECS, UC Berkeley
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Experience

University of California at Berkeley, EECS, Berkeley, CA, United States, 2015.4 - present
Position: Postdoctoral Researcher
Project: Hierarchical decision-making and reinforcement learning
Supervisor: Prof. Stuart Russell

Carnegie Mellon University, CSD, Pittsburgh, PA, United States, 2013.12 - 2015.3
Position: Visiting Research Scholar
Project: Human-robot interaction on CoBots
Supervisor: Prof. Manuela Veloso and Prof. Reid Simmons

University of Science and Technology of China, CSD, Hefei, Anhui, China, 2009.9 - 2014.11
Position: Research Assistant
Project: Hierarchical decision-making in RoboCup domains
Supervisor: Prof. Xiaoping Chen

Education

University of Science and Technology of China, Hefei, Anhui, China, 2009.9 - 2014.11
Ph.D. in Computer Science, advised by Prof. Xiaoping Chen
Thesis: Markov Theory based Planning and Sensing under Uncertainty

University of Science and Technology of China, Hefei, Anhui, China, 2005.9 - 2009.6
B.E. in Computer Science

Research Interests

Decision-theoretic Planning, Reinforcement Learning and Robotics

Publications

[1] **Aijun Bai**, Siddharth Srivastava, and Stuart J. Russell. Markovian state and action abstractions for MDPs via hierarchical MCTS. In *Proceedings of the Twenty-Fifth International Joint Conference on Artificial Intelligence, IJCAI 2016, New York, NY, USA, 9-15 July 2016*, pages 3029–3039, 2016.

[2] Zongzhang Zhang, David Hsu, Wee Sun Lee, Zhan Wei Lim, and **Aijun Bai**. PLEASE: palm leaf search for POMDPs with large observation spaces (extended abstract). In *Proceedings of the Eighth Annual Symposium on Combinatorial Search, SOCS 2015, 11-13 June 2015, Ein Gedi, the Dead Sea, Israel.*, pages 238–240, 2015.

[3] Zongzhang Zhang, David Hsu, Wee Sun Lee, Zhan Wei Lim, and **Aijun Bai**. PLEASE: palm leaf search for POMDPs with large observation spaces. In *Proceedings of the Twenty-Fifth International Conference on Automated Planning and Scheduling, ICAPS 2015, Jerusalem, Israel, June 7-11, 2015.*, pages 249–258, 2015.

[4] **Aijun Bai**, Feng Wu, and Xiaoping Chen. Online planning for large Markov decision processes with hierarchical decomposition. *ACM Transactions on Intelligent Systems and Technology (TIST)*, 6(4):45:1–45:28, Jul 2015.

[5] **Aijun Bai**, Feng Wu, Zongzhang Zhang, and Xiaoping Chen. Thompson sampling based Monte-Carlo planning in POMDPs. In *Proceedings of the Twenty-Fourth International Conference on Automated Planning and Scheduling, ICAPS 2014, Portsmouth, New Hampshire, USA, June 21-26, 2014*, 2014.

[6] **Aijun Bai**, Reid Simmons, Manuela Veloso, and Xiaoping Chen. Intention-aware multi-human tracking for human-robot interaction via particle filtering over sets. In *AAAI Fall Symposium Series*, 2014.

[7] Haochong Zhang, Miao Jiang, Haibo Dai, **Aijun Bai**, and Xiaoping Chen. WrightEagle 2D soccer simulation team description 2013. In *RoboCupg, Eindhoven, The Netherlands*, 2013.

[8] Qiang Lu, Guanghui Lu, **Aijun Bai**, Dongxiang Zhang, and Xiaoping Chen. An intelligent service system with multiple robots. In *Robot Competition of International Joint Conference on Artificial Intelligence (IJCAI 2013)*, Beijing, China, 2013.

[9] **Aijun Bai**, Feng Wu, and Xiaoping Chen. Bayesian mixture modelling and inference based Thompson sampling in Monte-Carlo tree search. In C. J. C. Burges, L. Bottou, M. Welling, Z. Ghahramani, and K. Q. Weinberger, editors, *Advances in Neural Information Processing Systems (NIPS) 26*, pages 1646–1654. Curran Associates, Inc., 2013.

[10] **Aijun Bai**, Haochong Zhang, Guanghui Lu, Miao Jiang, and Xiaoping Chen. WrightEagle 2D soccer simulation team description 2012. In *RoboCup, Mexico City, Mexico*, 2012.

[11] **Aijun Bai**, Feng Wu, and Xiaoping Chen. Towards a principled solution to simulated robot soccer. In Xiaoping Chen, Peter Stone, Luis Enrique Sucar, and Tijn van der Zant, editors, *RoboCup*, volume 7500 of *Lecture Notes in Computer Science*, pages 141–153. Springer, 2012.

[12] **Aijun Bai**, Feng Wu, and Xiaoping Chen. Online planning for large MDPs with MAXQ decomposition (extended abstract). In Wiebe van der Hoek, Lin Padgham, Vincent Conitzer, and Michael Winikoff, editors, *International Conference on Autonomous Agents and Multiagent Systems, AAMAS 2012, Valencia, Spain, June 4-8, 2012 (3 Volumes)*, pages 1215–1216. IFAAMAS, 2012.

[13] **Aijun Bai**, Feng Wu, and Xiaoping Chen. Online planning for large MDPs with MAXQ decomposition. In *Proc. of the Autonomous Robots and Multirobot Systems workshop (at AAMAS 2012)*, Jun 2012.

[14] **Aijun Bai**, Guanghui Lu, Haochong Zhang, and Xiaoping Chen. WrightEagle 2D soccer simulation team description 2011. In *RoboCup, Istanbul, Turkey*, 2011.

[15] **Aijun Bai**, Xiaoping Chen, Patrick MacAlpine, Daniel Urieli, Samuel Barrett, and Peter Stone. WrightEagle and UT Austin Villa: RoboCup 2011 simulation league champions. In Thomas Röfer, Norbert Michael Mayer, Jesus Savage, and Uluc Saranli, editors, *RoboCup*, volume 7416 of *Lecture Notes in Computer Science*, pages 1–12. Springer, 2011.

[16] **Aijun Bai**, Jing Wang, Guanghui Lu, Yuhang Wang, Haochong Zhang, Yuancong Zhu, Ke Shi, and Xiaoping Chen. WrightEagle 2D soccer simulation team description 2010. In *RoboCup, Singapore, Singapore*, 2010.

[17] Ke Shi, **Aijun Bai**, Yunfang Tai, and Xiaoping Chen. Wrighteagle 2009 2D soccer simulation team description paper. In *RoboCup, Graz, Austria*, 2009.

[18] Ke Shi, Tengfei Liu, **Aijun Bai**, Wenkui Wang, Changjie Fan, and Xiaoping Chen. WrightEagle 2008 simulation 2D team description paper. In *RoboCup, Suzhou, China*, 2008.

Honors and Awards

Ali Star of Alibaba Inc., 2013.

World Champion of Soccer Simulation 2D, RoboCup 2013, Eindhoven, The Netherlands, Jul 2013.

Champion of Soccer Simulation 2D, RoboCup China Open 2012, Hefei, China, Dec 2012.

First Place of Soccer Simulation 2D Free Challenge, RoboCup 2012, Mexico City, Mexico, Jun 2012.

Second Place of Soccer Simulation 2D, RoboCup 2012, Mexico City, Mexico, Jun 2012.

Champion of Soccer Simulation 2D, RoboCup China Open 2011, Lanzhou, China, Aug 2011.

World Champion of Soccer Simulation 2D, RoboCup 2011, Istanbul, Turkey, Jul 2011.

Champion of Soccer Simulation 2D, RoboCup China Open 2010, Ordos, China, Jul 2010.

Second Place of Soccer Simulation 2D, RoboCup 2010, Singapore, Singapore, Jul 2010.

Champion of Soccer Simulation 2D, RoboCup China Open 2009, Dalian, China, Nov 2009.

World Champion of Soccer Simulation 2D, RoboCup 2009, Graz, Austria, Jun 2009.

Second Place of Soccer Simulation 2D, RoboCup China Open 2008, Zhongshan, China, Dec 2008.

Second Place of Soccer Simulation 2D, RoboCup 2008, Suzhou, China, Jul 2008.

Champion of Soccer Simulation 2D, RoboCup China Open 2007, Jinan, China, Oct 2007.

Scholarships

Early Researcher Support of ICAPS, 2014.

Travel Award of NIPS Foundation, 2013.

Glarun Scholarship of CETC-14, 2013.

Scholarship of China Scholarship Council (CSC), 2013.

Kwang-Hua Scholarship of USTC, 2012.

Aegon-Industrial Responsibility Scholarship of USTC, 2012.

Outstanding Student Scholarship of USTC, 2006, 2007, 2008.

Outstanding Freshman Scholarship of USTC, 2005.

Professional Services

Reviewer: AAMAS 2011-2013;2017, Agent CN 2012, AAAI 2012;2015, RoboCup 2012-2014, IAS 2013;2014, IEEE Intelligent Systems

Programme Committee: IJCAI 2015;2016;2017, AAAI 2016;2017

Organizing Committee: RoboCup 2012;2013, RoboCup China Open 2007-2012

Technical Committee: RoboCup 2011, RoboCup China Open 2007-2012

Qualifications

Strong programming and software development abilities

Rich **artificial intelligence**, **automated planning**, **machine learning** and **robotics** experience

Excellent interpersonal, communicating, writing, analytical and research skills

Reliable, versatile, cooperative, good team member or independent worker

Technical Skills

Proficiency in C/C++, Python, BASH and LaTeX coding languages

Rich Qt, Boost, ODPS, SQL, ROS and OpenRAVE experience

Experienced Linux/UNIX administration and programming skills

Familiar with agent, database, web, cloud computing and robotics development