Wanxin Jin

1200 Happy Hollow Road, West Lafayette, IN 47906, USA

🌐 wanxinjin.github.io   ✉ wanxinjin@gmail.com   🔗 wanxinjin   📱 +1 765-409-7912

Education & Work

Purdue University	West Lafayette, IN, USA
PhD in Autonomy and Control	*Aug. 2017 - May 2021*
Technical University of Munich (TUM)	Munich, Germany
Research Assistant at the Chair of Information-oriented Control	*Aug. 2016 - Aug. 2017*
Harbin Institute of Technology	Harbin, China
M.Sc. in Control Science and Engineering	*Sept. 2014 - Jul. 2016*
Harbin Institute of Technology	Harbin, China
B.S. in Automation (Top 5%)	*Aug. 2010 - Jun. 2014*

Research Interests

Control + Learning:	Inverse optimal control, Inverse reinforcement learning, Differentiable control and learning, Safe learning and control, Optimal control, Reinforcement learning, Robust control
Robotics + Human:	Learning from demonstrations, Imitation learning, Motion planning, Learning with human-in-the-loop, Human-robot interaction
Additional Interests:	Image processing, Computer vision, SLAM

Teaching & Services

Teaching:	○ AAE 564: Linear Systems Analysis and Synthesis	*Fall 2020, Purdue*
	○ AAE 364: Control Systems Analysis	*Fall 2020, Purdue*
	○ AAE 421: Flight Dynamics and Control	*Spring 2020, Fall 2019, Purdue*
	○ AAE 364L: Control System Laboratory	*Fall 2018, Purdue*
	○ Adaptive and Predictive Control	*Spring 2017, TUM*
	○ Advanced Control and Robotics Lab	*Spring 2017, TUM*
Reviewer:	○ Automatica (2020)	
	○ IEEE Transactions on Robotics (2020)	
	○ Systems & Control Letters (2020)	
	○ IEEE Transactions on Industrial Electronics (2020)	
	○ IEEE Transactions on Neural Networks and Learning Systems (2019)	
	○ IEEE Transactions on Mechatronics (2019)	

Awards

○ Magoon Award for Excellence in Teaching, Purdue University	*2020*
○ Ross Fellowship, Purdue University	*2018*
○ First prize winner of Provincial Science and Technology Award, Heilongjiang, China	*2017*
○ National Scholarship for Graduates (*Top 1%*), Ministry of Education, China	*2015*
○ First prize in College Mathematics Competition, Chinese Mathematical Society	*2012*

Publications in PhD Study

Published & Accepted

1. **Wanxin Jin**, Zhaoran Wang, Zhuoran Yang, and Shaoshuai Mou. Pontryagin differentiable programming: An end-to-end learning and control framework. In *Advances in Neural Information Processing Systems (NeurIPS)*, 2020. Also available as preprint arXiv:1912.12970

2. **Wanxin Jin**, Dana Kulić, Shaoshuai Mou, and Sandra Hirche. Inverse optimal control from incomplete trajectory observations. *The International Journal of Robotics Research (IJRR)*, 2021. Accepted, in press. Also available as preprint arXiv:1803.07696

3. **Wanxin Jin** and Shaoshuai Mou. Distributed inverse optimal control. *Automatica*, 2021. Accepted, in press

4. **Wanxin Jin**, Dana Kulić, Jonathan Feng-Shun Lin, Shaoshuai Mou, and Sandra Hirche. Inverse optimal control for multiphase cost functions. *IEEE Transactions on Robotics (T-RO)*, 35(6):1387–1398, 2019

Under review & Preprints

5. **Wanxin Jin**, Todd D Murphey, and Shaoshuai Mou. Learning from incremental directional corrections. Submitted to *IEEE Transactions on Robotics (T-RO)*, 2020, under review. Also available as preprint arXiv:2011.15014

6. **Wanxin Jin**, Todd D Murphey, Dana Kulić, Neta Ezer, and Shaoshuai Mou. Learning from sparse demonstrations. Submitted to *IEEE Transactions on Robotics (T-RO)*, 2020, under review. Also available as preprint arXiv:2008.02159

7. **Wanxin Jin**, Zihao Liang, and Shaoshuai Mou. Inverse optimal control from demonstration segments. Submitted to *IEEE International Conference on Robotics and Automation (ICRA), 2021*, under review. Also available as preprint arXiv:2010.15034

8. Sooyung Byeon, **Wanxin Jin**, Dawei Sun, and Inseok Hwang. Human-automation interaction for assisting novices to emulate experts by inferring task objective functions. Submitted to *IEEE International Conference on Robotics and Automation (ICRA), 2021*, under review

9. **Wanxin Jin**, Zhaoran Wang, Zhuoran Yang, and Shaoshuai Mou. Neural certificates for safe control policies. 2020. Available as preprint arXiv:2006.08465

Previous Publications

10. **Wanxin Jin**, Weiyang Lin, Xianqiang Yang, and Huijun Gao. Reference-free path-walking method for ball grid array inspection in surface mounting machines. *IEEE Transactions on Industrial Electronics*, 64(8):6310–6318, 2017

11. Huijun Gao, **Wanxin Jin**, Xianqiang Yang, and Okyay Kaynak. A line-based-clustering approach for ball grid array component inspection in surface-mount technology. *IEEE Transactions on Industrial Electronics*, 64(4):3030–3038, 2016

12. Xiaoguang Di, **Wanxin Jin**, and Ying Yu. Digital image stabilization with moving foreground objects. *Opt. Precision Eng.*, 22(1):177–185, 2014

Previous Granted Patents

1. Huijun Gao, **Wanxin Jin**, Xianqiang Yang, Jinyong Yu, Guanghui Sun, Weiyang Lin, and Zhan Li. Multi-type bga chip visual recognition method using line-based-clustering, 2017. US Patent US9965847

2. Huijun Gao, **Wanxin Jin**, Jinyong Yu, and Weiyang Lin. A subpixel edge detection algorithm for blurred images, 2016. Chinese Patent CN106651828B

3. Huijun Gao, **Wanxin Jin**, Jun Teng, and Zhan Li. Modified hough transformation for fast image registration, 2016. Chinese Patent CN106485731B

4. **Wanxin Jin**, Huijun Gao, Sheng Yin, and Guang Wang. A co-occurrence matrix method for thread recognition, 2015. Chinese Patent CN105160656B

5. Huijun Gao, **Wanxin Jin**, Xianqiang Yang, Jinyong Yu, and Hao Sun. A grid array graphic code and its visual recognition, 2015. Chinese Patent CN105095937B

6. Xiaoguang Di and **Wanxin Jin**. An adaptive image stabilization algorithm, 2013. Chinese Patent CN103079037B

7. Xiaoguang Di, **Wanxin Jin**, Xuejian Dong, Hongmei Gao, and Jianfei Xu. A fast image stabilization algorithm for large-scale rotational vibrations, 2013. Chinese Patent CN103841296B