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EDUCATION

Ph.D. in Mechanical Engineering with a certificate in Cognitive Science	University of Delaware	2013
MS in Control Theory and Control Engineering	Beijing Institute of Technology	2009
BS in Electrical Engineering and Automation	Beijing Institute of Technology.	2007

PROFESSIONAL EXPERIENCE

1/2016–present Assistant Professor , ECE, Worcester Polytechnic Institute	Worcester, MA
1/2014–12/2015 Post-Doc , ESE, University of Pennsylvania	Philadelphia, PA

PROFESSIONAL ACTIVITIES

Reviewer of:

IEEE Transaction on Automatic Control (TAC); IEEE Robotics and Automation Letters (RA-L); IEEE Control Systems Letters (RA-L); IEEE Conference on Decision and Control (CDC); International Journal of Robotics Research (IJRR); IEEE International Conference on Robotics and Automation (ICRA); IEEE International Conference on Intelligent Robots and Systems (IROS); World Congress of the International Federation of Automatic Control (IFAC); American Control Conference (ACC); Conference on Decision and Game Theory for Security (GameSec); Hybrid Systems: Computation and Control (HSCC).

Program Committee of: Autonomous Agents and Multiagent Systems (AAMAS)2019; Hybrid Systems: Computation and Control (HSCC) 2019; International Symposium on Experimental Robotics (ISER) 2018.

Associate Editor for: IROS, ICRA, GameSec;

Faculty advisor for: Women in Robotics Engineering at the Worcester Polytechnic Institute.

Steering committee for: Women in Engineering at the University of Delaware.

Workshop organizer for: Robotics Science and Systems (RSS) conference in Rome, Italy on July 16-17, 2015.

Mentor in: Summer Research Experience for NSF Undergraduates (REU) program 2012.

PUBLICATIONS

Under review

- U3. Lening Li, Haoxiang Ma, Abhishek N. Kulkarni, Jie Fu, “Dynamic Hypergames for Synthesis of Deceptive Strategies with Temporal Logic Objectives”, ArXiv: <https://arxiv.org/abs/2007.15726>, submitted to *IEEE Transactions on Automation Science and Engineering*, 2020.
- U2. Jie Fu, “ Probabilistic Planning with Preferences over Temporal Goals”, submitted to *American Control Conference*, 2020.
- U1. Jie Fu, Haoxiang Ma, Lening Li, Trent Ray Jaeger, “Synthesis of Sensor Placement Strategies in Proactive Cyber Defense with Temporal Logic Constraints”, submitted to *AAAI Conference on Artificial Intelligence*, 2020.

Journal publications

- J11. Abhishek. N. Kulkarni, Huan Luo, Nandi O. Leslie, Charles. A. Kamhoua and Jie Fu, “Deceptive Labeling: Hypergames on Graphs for Stealthy Deception,” in *IEEE Control Systems Letters*, vol. 5, no. 3, pp. 977-982, July 2021. Early Access.
- J10. Luyao Niu, Jie Fu, Andrew Clark, “Optimal Minimum Violation Control Synthesis of Cyber-Physical Systems Under Attacks,” in *IEEE Transactions on Automatic Control*, 2020.
- J9. Bo Lyu, Yanhua Li, Jie Fu, Andrew C. Trapp, Haiyong Xie and Yong Liao, “Scalable User-Substation Assignment with Big Data from Power Grids”, *IEEE Transactions on Big Data*, vol.PP, no. 99. 2017.
- J8. Erik Skorina, Ming Luo, Weijia Tao, Fuchen Chen, Jie Fu, Cagdas Onal, “Adapting to Flexibility: Model Reference Adaptive Control of Soft Bending Actuators”, *IEEE Robotics and Automation Letters*, vol. 2, no. 2, pp. 964-970, April 2017.
- J7. Jie Fu and Ufuk Topcu, “Synthesis of joint control and active sensing strategies under temporal logic constraints,” *IEEE Transactions on Automatic Control*, 2016, to appear.
- J6. Jie Fu and Ufuk Topcu, “Synthesis of shared autonomy policies with temporal logic specifications,” *IEEE Transactions on Automation Science and Engineering*, vol. 13, iss. 1, pp. 1-11, 2015.
- J5. Jie Fu, Herbert G. Tanner, Jeffrey Heinz, Konstantinos Karydis, Jane Chandlee, and Cesar Koirala, “Symbolic planning and control using game theory and grammatical inference,” *Engineering Applications of Artificial Intelligence*, vol. 37, pp. 378-391, 2015.
- J4. Jie Fu, Herbert G. Tanner, Jeffrey Heinz, “Concurrent multi-agent systems with temporal logic objectives: game theoretic analysis and planning through negotiation,” *IET Control Theory & Applications*, vol. 9(3), pp. 465-474, 2015.
- J3. Jie Fu, Herbert G. Tanner, Jeffrey Heinz, Jane Chandlee, “Adaptive symbolic control for finite-state transition systems with grammatical inference,” *IEEE Transactions on Automatic Control*, vol.59, no.2, pp. 505–511, 2014.
- J2. Jie Fu, Herbert G. Tanner, “Bottom-up symbolic control: attractor-based planning and behavior synthesis,” *IEEE Transactions on Automatic Control*, vol.58, no.12, pp. 3142–3155, 2013.
- J1. Herbert G. Tanner, Jie Fu, Chetan Rawal, Jorge L. Piovesan, and Chaouki T. Abdallah, “Finite abstractions for hybrid systems with stable continuous dynamics,” *Discrete Event Dynamic Systems* vol 22, no. 1, pp. 83–99, 2012.

Book chapters

- B2. Abhishek N. Kulkarni and Jie Fu, “A Theory of Hypergames on Graphs for Synthesizing Dynamic Cyber Defense with Deception”, In *Game Theory and Machine Learning for Cyber Security*, Edited by Charles A. Kamhoua, Christopher D. Kiekintveld, Fei Fang, Quanyan Zhu, Wiley, 2021. expected.
- B1. Jie Fu, Jeffrey Heinz, Herbert G. Tanner, “An algebraic characterization of strictly piecewise languages,” In *Proceedings of the 8th annual conference on Theory and Applications of Models of Computation*, pages 252-263, Berlin, Heidelberg, 2011. Springer-Verlag.

Conference publications

- C29. Abhishek N. Kulkarni, Jie Fu, “Decoy Allocation Games on Graphs with Temporal Logic Objectives”, *Conference on Decision and Game Theory for Security*, 2020.
- C28. Xuan Liu, Renato Gasoto, Ziyi Jiang, Cagdas Onal, Jie Fu, “Learning to Locomote with Deep Neural-Network and CPG-based Control in a Soft Snake Robot”, *IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)*, 2020.

- C27. Abhishek N. Kulkarni, Jie Fu, “Deceptive Strategy Synthesis under Action Misperception in Reachability Games”, *International Joint Conferences on Artificial Intelligence*, 2020.
- C26. Zhentian Qian, Jie Fu, Quanyan Zhu, “A Receding-Horizon MDP Approach for Performance Evaluation of Moving Target Defense in Networks”, *IEEE Conference on Control Technology and Applications*, 2020.
- C25. Lening Li and Jie Fu, “Topological Approximate Dynamic Programming under Temporal Logic Constraints”, *IEEE Conference on Decision and Control*, 2019.
- C24. Abhishek N Kulkarni and Jie Fu, “Opportunistic Synthesis in Reactive Games under Information Asymmetry”, *IEEE Conference on Decision and Control*, 2019.
- C23. Lening Li, Jie Fu, “Approximate Dynamic Programming with Probabilistic Temporal Logic Constraints”, *American Control Conference*, accepted, 2019.
- C22. Xuan Liu, Jie Fu, “Compositional Planning in Markov Decision Process: Temporal abstraction meets generalized logic composition”, *American Control Conference*, accepted, 2019.
- C21. Renato Gasoto, Miles Macklin, Xuan Liu, Yinan Sun, Kenny Erleben, Cagdas Onal, Jie Fu, “A Validated Physical Model For Real-Time Simulation of Soft Robotic Snakes”, *IEEE International Conference on Robotics and Automation*, 2019.
- C20. Luyao Niu, Jie Fu, Andrew Clark, “Minimum Violation Control Synthesis on Cyber-Physical Systems under Attacks”, *IEEE Conference on Decision and Control*, pp. 262-269., Miami Beach, FL, 2018.
- C19. Steven Paull Carr, Nils Jansen, Ralf Wimmer, Jie Fu, Ufuk Topcu “Human-in-the-Loop Synthesis of Partially Observable Markov Decision Processes”, *American Control Conference*, 2018.
- C18. Abhishek Ninad Kulkarni, Jie Fu, “A Compositional Approach to Reactive Games under Temporal Logic Specifications”, *American Control Conference*, 2018.
- C17. Guojun Wu, Yichen Ding, Yanhua Li, Jun Luo, Fan Zhang, Jie Fu, “Data-Driven Inverse Learning of Passenger Preferences in Urban Public Transits”, *IEEE Conference on Decision and Control*, 2017.
- C16. Jie Fu, Ivan Papusha, and Ufuk Topcu, “Sampling-based approximate optimal control under temporal logic constraints”, *20th ACM International Conference on Hybrid Systems: Computation and Control*, 2017.
- C15. Lening Li, Jie Fu, “Sampling-based approximate optimal temporal logic planning”, *IEEE International Conference on Robotics and Automation (ICRA)*, Singapore, pp. 1328-1335, 2017.
- C14. Bo Lyu, Shijian Li, Yanhua Li, Jie Fu, Andrew Trapp, Haiyong Xie and Yong Liao, “Scalable User Assignment in Power Grid: A Data Driven Approach”, *24th ACM SIGSPATIAL International Conference on Advances in Geographic Information Systems*, 2016.
- C13. Rayna Dimitrova, Jie Fu, Ufuk Topcu, “Robust optimal policies for Markov decision processes with safety-threshold constraints”, *IEEE Conference on Decision and Control*, 2016.
- C12. Ivan Papusha, Jie Fu, Ufuk Topcu, and Richard M. Murray, “Automata Theory Meets Approximate Dynamic Programming: Optimal Control with Temporal Logic Constraints”, *IEEE Conference on Decision and Control*, 2016.
- C11. Jie Fu, Nikolay Atanasov, Ufuk Topcu, and George J. Pappas, “Optimal temporal logic planning in probabilistic semantic maps,” *IEEE International Conference on Robotics and Automation*, 2016.
- C10. Jie Fu and Ufuk Topcu, “Computational methods for stochastic control with metric interval temporal logic specifications,” *IEEE Conference on Decision and Control*, 2015.
- C9. Jie Fu, Shuo Han, and Ufuk Topcu, “Optimal control in markov decision processes via distributed optimization,” *IEEE Conference on Decision and Control*, 2015.
- C8. Jie Fu, Ufuk Topcu, “Integrating active sensing into reactive synthesis with temporal logic constraints under partial observations,” *American Control Conference*, 2015.
- C7. Jie Fu, Ufuk Topcu, “Pareto efficiency in synthesizing shared autonomy policies with temporal logic constraints.” *IEEE International Conference on Robotics and Automation*, 2015.

- C6. Jie Fu, Ufuk Topcu, “Probably approximately correct MDP learning and control with temporal logic constraints,” *Robotics: Science and Systems*, 2014.
- C5. Jie Fu, Rayna Dimitrova and Ufuk Topcu, “Abstractions and sensor design in partial-information, reactive controller synthesis,” *American Control Conference*, 2014.
- C4. Jie Fu, Herbert G. Tanner, Jeffrey Heinz, “Adaptive planning in unknown environments using grammatical inference,” *IEEE 52nd Annual Conference on Decision and Control*, pp.5357–5363, 2013.
- C3. Jie Fu, Shridhar Shah and Herbert G. Tanner, “Hierarchical control via approximate simulation and feedback linearization,” *American Control Conference*, pp.1816–1821, 2013.
- C2. Jane Chandlee, Jie Fu, Konstantinos Karydis, Cesar Koirala, Jeffrey Heinz, Herbert G. Tanner, “Integrating grammatical inference into robotic planning,” *11th International Conference on Grammatical Inference*, vol 21. pp. 69–83, 2012.
- C1. Jie Fu, Herbert G. Tanner, “Optimal planning on register automata,” *American Control Conference*, pp. 4540–4545, 2012.

Conference workshop abstracts and posters

- W2. Renato Gasoto, Yinan Sun, Cagdas Onal, Jie Fu. “Learning to Navigate in Complex Terrains with Soft Robotic Snake”, *RSS Workshop on Challenges and Opportunities for Resilient Collective Intelligence in Subterranean Environments*, Abstract and Poster Presentation, June, 2018.
- W1. Kenekchukwu C. Mbanisi, Hideyuki Kimpara, Jie Fu and Zhi Li, “A Control Architecture for Rendering Passive and Active Whole-body Coordination in Driving Tasks”, *IROS 2017 Workshop on Human Movement Understanding for Humanoid and Wearable Robots*, Vancouver, BC, Canada, September, 2017.