Zikang Xiong
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Education

Purdue University	West Lafayette, IN	Computer Science	Ph.D., 2018 – Present *Supervised by Suresh Jagannathan*
University of Electronic Science and Technology of China	Chengdu, China	Software Engineering	B.Eng., 2014 – 2018

Research & Professional Experience

2018.8 – Present	Assured Autonomy Research Assistant, Purdue University
2017.5 – 2017.9	Software Engineer Intern, Storage Integration and Verification Department, Huawei Chengdu Research Center

Research Projects

- ***Salable Verification and Learning for Cyber-Physical Systems with Complex Properties*** [pdf]
  - Presented a pipeline for training neural policy by reinforcement learning with guaranteed safety.
  - Built a probabilistic reachability analysis approach.
  - Provided a synthesis algorithm to generate time-variant linear policy with safety guarantee.
  - Scaled up to 896-dimension system.

- ***Robustness to Adversarial Attack on Cyber-Physical Systems*** [pdf, artifact]
  - Proposed a blackbox attack approach based on Bayesian optimization.
  - Designed a defense mechanism following monitor-repair scheme.
  - Evaluated the approach on a range of reinforcement learning algorithms and challenging tasks including robot models such as humanoid and ant in PyBullet, an F16 jet ground collision avoidance system, and some other classical continuous control systems.

- ***Verification for Learning-Enabled Cyber-Physical Systems*** [pdf, code]
  - Provided verifiable safety guarantee for post-deployed neural-network-controlled Cyber-Physical Systems (e.g., robots, UVA) trained with reinforcement learning.

Publications

1. Zikang Xiong and Suresh Jagannathan, Scalable synthesis of verified controllers in deep reinforcement learning, *Under Submission* .
2. Zikang Xiong, Joe Eappen, He Zhu, and Suresh Jagannathan, Robustness to adversarial attacks in learning-enabled controllers, *Adaptive and Learning Agents Workshop at AAMAS 2021 & Under Submission* .
3. He Zhu, Zikang Xiong, Stephen Magill, and Suresh Jagannathan, An inductive synthesis framework for verifiable reinforcement learning, in *Proceedings of the 40th ACM SIGPLAN Conference on Programming Language Design and Implementation*, PLDI 2019 (Association for Computing Machinery, New York, NY, USA, 2019) p. 686–701.

Professional Services

- ADHS21 AEC
- CAV20 AEC
- PLDI20 AEC