

# Zheyuan Ryan Shi

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- CONTACT** Ryan Shi (preferred name) ryanshi@cmu.edu  
Wean 5309, 5000 Forbes Ave www.zheyuan.me  
Pittsburgh, PA 15213, USA
- EDUCATION** **School of Computer Science, Carnegie Mellon University, USA**  
Ph.D. Student, Societal Computing. Aug 2018 - Present  
Advisor: Fei Fang
- Swarthmore College, USA**  
B.A. Mathematics and Computer Science with Honors, 4.00/4.00 Aug 2014 - May 2018
- Massachusetts Institute of Technology, USA**  
Visiting Student, EECS, 5.00/5.00 Aug 2016 - May 2017
- RESEARCH INTERESTS** Artificial intelligence for social good, as related to social work, education, and security. Optimization, data science, and game theory.
- WORKING PAPERS** **Zheyuan Ryan Shi**, Claire Wang, and Fei Fang. Artificial Intelligence for Social Good: A Survey.  
**Zheyuan Ryan Shi**, Ariel D. Procaccia, Kevin S. Chan, Sridhar Venkatesan, Noam Ben-Asher, Nandi O. Leslie, Charles Kamhoua, and Fei Fang. Learning and Planning in Feature Deception Games.
- PUBLICATIONS** **Zheyuan Ryan Shi\***, Yiwen Yuan\*, Kimberly Lo, Leah Lizarondo and Fei Fang. Towards Improving Efficiency in Food Rescue Platforms. In Proceedings of the Thirty-Second Annual Conference on Innovative Applications of Artificial Intelligence (IAAI-20).  
**Zheyuan Ryan Shi**, Aaron Schlenker, Brian Hay, Daniel Bittleston, Siyu Gao, Emily Peterson, John Trezza, and Fei Fang. Draining the Water-hole: Mitigating Social Engineering Attacks with CyberTWEAK. In Proceedings of the Thirty-Second Annual Conference on Innovative Applications of Artificial Intelligence (IAAI-20).  
Yufei Wang, **Zheyuan Ryan Shi**, Lantao Yu, Yi Wu, Rohit Singh, Lucas Joppa, and Fei Fang. Deep Reinforcement Learning for Green Security Games with Real-Time Information. To appear in Proceedings of the Thirty-Third AAAI Conference on Artificial Intelligence (AAAI-19).  
**Zheyuan Ryan Shi\***, Ziyue Tang\*, Long Tran-Thanh, Rohit Singh, and Fei Fang. Designing the Game to Play: Optimizing Payoff Structure in Security Games. In Proceedings of the 27th International Joint Conference on Artificial Intelligence and the 23rd European Conference on Artificial Intelligence (IJCAI-ECAI-18).  
**Zheyuan Ryan Shi** and Fei Fang. Optimizing Peer Teaching to Enhance Team Performance. In Autonomous Agents and Multiagent Systems: AAMAS'17 Workshops Best Papers, Volume 10642 of Lecture Notes in Artificial Intelligence, Springer, 2017. Winner of Best Paper at TEAMAS-17.  
**Zheyuan Ryan Shi** and Sindhu Kutty. Strategic Reporting in Exponential Family Prediction Markets. In Proceedings of the 2016 MIT IEEE Undergraduate Research Technology Conference (IEEE URTC 2016).

HONORS AND AWARDS	<p>Upsilon Pi Epsilon Honor Society Scholarship, IEEE Computer Society, 2018  Nomination to Phi Beta Kappa, 2018  Best Paper Award, First International Workshop on Teams in Multiagent Systems (TEAMAS), 2017  Honorable Mention, CRA Outstanding Undergraduate Researcher Award, 2017  Conference travel grants: AAAI-20, IJCAI-ECAI-18, RecSys-16.</p>
SERVICES	<p><b>Program committee member (reviewer)</b></p> <ul style="list-style-type: none"> <li>• AAAI-20, special track on AI for Social Impact</li> <li>• The Workshop on AI for Social Good at IJCAI-19</li> <li>• The Workshop on AI for Social Good at NeurIPS-19</li> </ul>
TEACHING	<p><b>Teaching Assistant</b>  Artificial intelligence methods for social good (17-737), Carnegie Mellon University, Spring 2020.  Introduction to Econometrics (ECON 031), Swarthmore College, Spring 2016.</p> <p><b>Other teaching positions</b>  Math Clinician for all undergraduate math courses, Swarthmore College, Spring 2016.</p>
RESEARCH EXPERIENCE	<p><b>School of Computer Science, Carnegie Mellon University</b> <span style="float: right;">Sept 2017 - Present</span>  Learning in games in cybersecurity and sustainability domains. Formulated and analyzed two-layer optimization in Stackelberg security games. Applied deep reinforcement learning to solve security games with online information.  <i>Supervisor: Fei Fang</i></p> <p><b>Department of Mathematics, Swarthmore College</b> <span style="float: right;">Sept 2017 - May 2018</span>  Proposed homological symmetry and analyzed its use in topological data analysis. Experimented with planar curves and handwritten digits.  <i>Supervisor: Noah Giansiracusa</i></p> <p><b>CRCS, Harvard University</b> <span style="float: right;">Sept 2016 - May 2017</span>  Formulated the peer teaching problem and devised algorithms to boost team performance. Published and chosen as Best Paper in TEAMAS'17. Designed and experimented with doodle polling mechanisms.  <i>Supervisor: Fei Fang</i></p> <p><b>Human Dynamics Group, Media Lab, MIT</b> <span style="float: right;">Sept 2016 - May 2017</span>  Studied network structure in evolution strategies for deep reinforcement learning. Investigated influence patterns in SciCast prediction markets. Built DRL testing module on Amazon EC2, and Python package for the Influence Model.  <i>Supervisor: Dhaval Adjodah</i></p> <p><b>Department of Computer Science, Swarthmore College</b> <span style="float: right;">Jan 2016 - Aug 2016</span>  Investigated incentive compatibility in exponential family prediction markets. Published at IEEE URTC'16. Designed and analyzed cryptogenography protocols.  <i>Supervisors: Sindhu Kutty, Joshua Brody</i></p>
OTHER EXPERIENCE	<p><b>The Cornell, Maryland, Max Planck Pre-doctoral Research School</b> <span style="float: right;">Aug 2018</span>  Selected as one of the 80 attendees worldwide with scholarship.</p> <p><b>Summer Analyst, Credit Suisse, Hong Kong</b> <span style="float: right;">Jun 2017 - Aug 2017</span>  Credit and equity derivative structuring</p>