

# IanRiley

Doctoral Student

## about

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github/ttowncompiled

## interests

self-adaptive systems, formal methods, internet-of-things, high performance computing, software engineering, and computer science education (K-12 and higher education)

## education

'18-'20	<b>PhD Student in Computer Science</b> gpa: 3.81	the University of Tulsa
'16-'18	<b>Masters in Computer Science</b> gpa: 3.75	the University of Tulsa
'13-'16	<b>BS Computer Science and Mathematics</b> gpa: 3.51	the University of Tulsa

## experience

'15	<b>Google MTV</b> Designed and implemented the TacticalJS data persistence library for Angular. Tactical was my first attempt at creating the MVP for a new project using formal design patterns and techniques.	SWE intern on Angular
'14	<b>Google CAM</b> Implemented an internal UI to improve the workflow for creating pipelines of structured data for search. This was my first opportunity to think critically about end user experience and test driven design.	EP intern on Pinpoint

## research

- '18-'20 **Formal Methods** graduate research  
Constructed architectures and techniques to apply formal methods to IoT simulations and testbeds.
- '17-'18 **Resilient Mission Planning** graduate research  
Designed an algorithm that will assign tasks to a number of deployed assets, and will unassign/reassign tasks as necessary in order to best satisfy the constraints of the missions such as drone survival, intel retrieval, etc.
- '16-'17 **Pump Profiling** graduate research  
Developed a prediction algorithm that would use machine learning to study gas pump data, create a gas pump profile, and then predict when the gas pump was going to fail.
- '16 **Red** undergraduate research  
Evaluation of Red, a bioinformatics tool for detecting repeats denovo in nucleotide sequences.
- '13-'14 **RFID Research Grant** undergraduate research  
Developed protocols to concisely and securely store standard, adult vaccination information on 2000 bit RFID tags.
- '13 **Tulsa Undergraduate Research Challenge** undergraduate research  
Worked with a small team to design a dynamic risk access control system. This system extended the spatial access control model by employing PGMs such as Bayesian networks and Markov chains for decision making.

## fellowships

- '16 **Software Development and Industrial Practices** cs 3862  
I headed a small team of young students through the process of designing and implementing, using industrial techniques and design patterns, an in-browser module loader for JavaScript applications, and an online social media application.
- '15 **Software Tools and Practices** cs 3861  
I instructed a small group of young students on proper Agile development, Test driven design, and the use of Version Control systems as they each implemented their own code linter.

## assistanceships

- '16 **Software Development and Industrial Practices** cs 3862  
I headed a small team of young students through the process of designing and implementing, using industrial techniques and design patterns, an in-browser module loader for JavaScript applications, and an online social media application.
- '15 **Software Tools and Practices** cs 3861  
I instructed a small group of young students on proper Agile development, Test driven design, and the use of Version Control systems as they each implemented their own code linter.

## **courses as instructor**

- '16      **Software Development and Industrial Practices** cs 3862  
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I instructed a small group of young students on proper Agile development, Test driven design, and the use of Version Control systems as they each implemented their own code linter.

## **organizations**

- '14-'15      **Linux Users Group** president  
Conducted several meetings and headed a few projects over the course of the year which included research ventures into topics such as code reusability, workstation efficacy, net neutrality, and even bitcoins.
- '13-'15      **Tulsa Web Devs** member && contributor  
Contributed to numerous local and national civic hacking events targeting areas such as local city organization, public health, and food equality.
- '13-'15      **Association of Computing Machinery** operations chair  
Facilitated over two dozen lunch and learns, covering various topics, each year. I have also helped organize several collegiate and civic hackathons as well as have spearheaded a few extended hackathons focused on building code confidence in freshmen programmers.

## **publications**

- '20 **Evaluating Verification Awareness as a Method for Assessing Adaptation Risk** 1st author, journal revise & resubmit  
Riley I., Jahan S., Marshall A., Walter C., Gamble R., "Evaluating Verification Awareness as a Method for Assessing Adaptation Risk", *Future Generation Computer Systems*, Sept. 2020 (revise & resubmit).
- '20 **Assessing Adaptations based on Change Impacts** 2nd author  
Jahan S., Riley I., Gamble R., "Assessing Adaptations based on Change Impacts", 1st IEEE International Conference on Autonomic Computing and Self-Organizing Systems, Aug. 2020. DOI: 10.1109/AC-SOS49614.2020.00025.
- '20 **Extending Context Awareness by Anticipating Uncertainty with Enki and Darjeeling** 2nd author  
Jahan S., Riley I., Walter C., Gamble R., "Extending Context Awareness by Anticipating Uncertainty with Enki and Darjeeling", 4th Workshop on Self-Aware Computing, Aug. 2020. DOI: 10.1109/ACSOS-C51401.2020.00051.
- '20 **Toward a Negotiation Framework for Self-Integration** 1st author  
Riley I., Jahan S., Gamble R., "Toward a Negotiation Framework for Self-Integration", 7th Self-Improving Systems Integration Workshop, Aug. 2020. DOI: 10.1109/ACSOS-C51401.2020.00038.
- '20 **MAPE-K/MAPE-SAC: An interaction framework for adaptive systems with security assurance cases** 2nd author, journal  
Jahan S., Riley I., Walter C., Gamble R., M. Pasco, P. K. McKinley, B. H. C. Cheng, "MAPE-K/MAPE-SAC: An interaction framework for adaptive systems with security assurance cases", *Future Generation Computer Systems*, Mar. 2020. DOI: 10.1016/j.future.2020.03.031.
- '19 **Evaluating the Impact of Design Constraints on Expected System Performance** 1st author  
Riley, I. and Gamble, R.F., "Evaluating the Impact of Design Constraints on Expected System Performance," 4th International Workshop on Engineering Collective Adaptive Systems, June 2019. DOI: 10.1109/FAS-W.2019.00032.
- '18 **Using System Profiling for Effective Degradation Detection** 1st author  
Riley, I. and Gamble, R.F., "Using System Profiling for Effective Degradation Detection," *Proceedings of the 15th IEEE International Conference on Autonomic Computing*, Sept. 2018. DOI: 10.1109/ICAC.2018.00028.
- '18 **Predictive Path Planning Algorithm Using Kalman Filters and MTL Robustness** 3rd author  
Alqahtani, S., Taylor, S., Riley, I., Gamble, R.F., and Mailler, R., "Predictive Path Planning Algorithm Using Kalman Filters and MTL Robustness," *Proceedings of the 2018 IEEE International Symposium on Safety, Security, and Rescue Robotics (SSRR)*, Philadelphia, PA, Aug. 2018. DOI: 10.1109/SSRR.2018.8468646.
- '18 **Employing the SI Network Model to Evaluate Network Propagation in Bluetooth MANETs** 1st author  
Riley, I. and Gamble, R.F., "Employing the SI Network Model to Evaluate Network Propagation in Bluetooth MANETs," *Proceedings of the IEEE International Conference on Internet of Things*, July 2018. DOI: 10.1109/ICIOT.2018.00017.
- '18 **MTL Robustness for Path Planning with A\*** 2nd author  
Alqahtani, S., Riley, I., Taylor, S., Gamble, R.F., and Mailler, R., "MTL Robustness for Path Planning with A\*," *Proceedings of the 17th International Conference on Autonomous Agents and Multiagent Systems*, July 2018. DOI: 10.5555/3237383.3237425.
- '18 **Task Allocation in Uncertain Environments using a QuadTree and Flow Network** 2nd author  
Alqahtani, S., Riley, I., Taylor, S., Gamble, R.F., and Mailler R., "Task Allocation in Uncertain Environments using a QuadTree and Flow

## conferences

- '20      **SISSY 2020** Virtual  
Presenting our work on "Toward a Negotiation Framework for Self-Integration".
- '18      **AAMAS 2018** Stockholm, Sweden  
Presenting our work on "MTL Robustness for Path Planning with A\*."
- '18      **21st TU Annual Student Research Colloquium** Tulsa, OK, US  
Presented my work on "Employing the SI Network Model to Evaluate Network Propagation in Bluetooth MANets."
- '15      **AngularConnect 2015** London, UK  
Presented my work on the TactialJS library as a member of the Angular Team.