

# Matthew Peveler

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## EDUCATION

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### Rensselaer Polytechnic Institute

Troy, NY

- *Ph.D., Computer Science*

*Expected Summer 2020*

Teaching Assistant: Fall 2013 - Spring 2015; Research Assistant: Fall 2015 - Ongoing

### The College of New Jersey

Ewing, NJ

- *Bachelor of Science, Computer Science*

*May, 2013*

Member of Upsilon Pi Epsilon, International Honor Society for Computing Sciences

## PUBLICATIONS

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- Peveler, M., Kephart, J. O., Mou, X., Clement, G., and Su, H. (2020). A Virtual Mouse Interface for Supporting Multi-user Interactions. In Kurosu, M., editor, *Human-Computer Interaction. Multimodal and Natural Interaction*, volume 12182, pages 497–508. Springer International Publishing, Cham. Series Title: Lecture Notes in Computer Science
- Peveler, M., Tyler, J., Nelson, D. B., Cerqueira, R., and Su, H. (2020). Browser Based Digital Sticky Notes for Design Thinking. In *Companion Publication of the 2020 ACM Designing Interactive Systems Conference*, pages 349–352, Eindhoven Netherlands. ACM
- Divekar, R. R., Su, H., Kephart, J. O., DeBayser, M. G., Guerra, M., Mou, X., Peveler, M., and Chen, L. (2020). HUMAINE: Human Multi-Agent Immersive Negotiation Competition. In *Extended Abstracts of the 2020 CHI Conference on Human Factors in Computing Systems*, pages 1–10, Honolulu HI USA. ACM
- Maicus, E., Peveler, M., Aikens, A., and Cutler, B. (2020). Autograding Interactive Computer Graphics Applications. In *Proceedings of the 51st ACM Technical Symposium on Computer Science Education*, pages 1145–1151, Portland OR USA. ACM
- Govindarajulu, N. S., Bringsjord, S., and Peveler, M. (2019). On Quantified Modal Theorem Proving for Modeling Ethics. *Electronic Proceedings in Theoretical Computer Science*, 311:43–49
- Briggs, S., Perrone, M., Peveler, M., Drozdal, J., Balagoyzyan, L., and Su, H. (2019). Multimodal, Multiuser Immersive Brainstorming and Scenario Planning for Intelligence Analysis. In *2019 IEEE International Symposium on Technologies for Homeland Security (HST)*, pages 1–4, Woburn, MA, USA. IEEE
- Peveler, M., Kephart, J. O., and Su, H. (2019). Reagent: Converting Ordinary Webpages into Interactive Software Agents. In *Proceedings of the Twenty-Eighth International Joint Conference on Artificial Intelligence*, pages 6560–6562, Macao, China. International Joint Conferences on Artificial Intelligence Organization. Winner of Application Impact Award on Demonstration Track
- Peveler, M., Briggs, S., Drozdal, J., Balagoyzyan, L., Sun, C., Perrone, M., and Su, H. (2019). Translating the Pen and Paper Brainstorming Process into a Cognitive and Immersive System. In Kurosu, M., editor, *Human-Computer Interaction. Recognition and Interaction Technologies*, volume 11567, pages 366–376. Springer International Publishing, Cham
- Maicus, E., Peveler, M., Patterson, S., and Cutler, B. (2019). Autograding Distributed Algorithms in Networked Containers. In *Proceedings of the 50th ACM Technical Symposium on Computer Science Education - SIGCSE '19*, pages 133–138, Minneapolis, MN, USA. ACM Press
- Peveler, M., Maicus, E., and Cutler, B. (2019). Comparing Jailed Sandboxes vs Containers Within an Autograding System. In *Proceedings of the 50th ACM Technical Symposium on Computer Science Education - SIGCSE '19*, pages 139–145, Minneapolis, MN, USA. ACM Press

- Briggs, S., Drozdal, J., Peveler, M., Balagyozyan, L., Sun, C., and Su, H. (2019). Enabling Sensemaking for Intelligence Analysis in a Multi-user, Multimodal Cognitive and Immersive Environment. In *Proceedings of the Twelfth International Conference on Advances in Computer-Human Interactions*, pages 07–14, Athens, Greece. IARIA
- Divekar, R. R., Peveler, M., Rouhani, R., Zhao, R., Kephart, J. O., Allen, D., Wang, K., Ji, Q., and Su, H. (2018). CIRA: An architecture for building configurable immersive smart-rooms. In *Advances in Intelligent Systems and Computing*, pages 76–95. Springer International Publishing
- Peveler, M., Srivastava, B., Talamadupula, K., Sundar G., N., Bringsjord, S., and Su, H. (2018). Toward Cognitive-and-Immersive Systems: Experiments in a Cognitive Microworld. In *Proceedings of the Sixth Annual Conference on Advances in Cognitive Systems*, Pal Alto, California, USA
- Peveler, M., Govindarajulu, N. S., and Bringsjord, S. (2018). Towards automating the doctrine of triple effect. In *Proceedings of the International Conference on Robot Ethics and Standards (ICRES 2018)*, Troy, New York, USA
- Bringsjord, S., Govindarajulu, N. S., Sen, A., Peveler, M., Srivastava, B., and Talamadupula, K. (2018). Tentacular Artificial Intelligence, and the Architecture Thereof, Introduced. In *Proceedings of the Architectures and Evaluation for Generality, Autonomy & Progress in AI Workshop (AEGAP 2018)*, Stockholm, Sweden
- Govindarajulu, N. S., Bringsjord, S., Ghosh, R., and Peveler, M. (2017). Beyond the doctrine of double effect: A formal model of true self-sacrifice. In *Proceedings of the International Conference on Robot Ethics and Safety Standards (ICRESS2017)*, Lisbon, Portugal
- Sen, A., Peveler, M., Marton, N., Ghosh, R., Licato, J., Radke, R. J., Woodstock, T.-K. A. E., Dong, B., O’Neil, K., Carter, T., and Bringsjord, S. (2016). Toward the cognitive classroom: Mathematical physics. In *In Proceedings of 6th European Immersive Education Summit*, Padua, Italy
- Arista, D., Bringsjord, S., Peveler, M., Ghosh, R., Bello, P., and Licato, J. (2015). An algorithm for the pragmatic inference of relevance conditionals. Presented at *Model-Based Reasoning in Science and Technology. Models and Inferences: Logical, Epistemological, and Cognitive Issues (MBR15)*

## PRESENTATIONS

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- Peveler, M., Kephart, J., and Su, H. (2018). Context-aware intention resolution. Talk given at RPI
- Peveler, M., Breese, S., Maicus, E., Aikens, A., Cyrus, T., Dinella, E., Anderson, J., Barthelmess, J., Lee, M., Montealegre, L., Wang, J., Holzbauer, B., Cutler, B., and Milanova, A. (2018). Supporting team submissions and peer grading within submitty. Demo presented at ACM SIGCSE
- Peveler, M., Srivastava, B., Talamadupula, K., Bringsjord, S., and G., N. S. (2017). Solving false beliefs for the cognitive room. Talk/Demo presented at RPI
- Peveler, M., Tyler, J., Breese, S., Cutler, B., and Milanova, A. (2017). Submitty: An open source, highly-configurable platform for grading of programming assignments. Demo presented at ACM SIGCSE 2017

## POSTERS

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- Peveler, M., Maicus, E., and Cutler, B. (2020). Automated and Manual Grading of Web-Based Assignments. In *Proceedings of the 51st ACM Technical Symposium on Computer Science Education*, pages 1373–1373, Portland OR USA. ACM
- Maicus, E., Patel, D., Peveler, M., and Cutler, B. (2020). Random Input and Automated Output Generation in Submitty. In *Proceedings of the 51st ACM Technical Symposium on Computer Science Education*, pages 1372–1372, Portland OR USA. ACM

- Peveler, M., Gurjar, T., Maicus, E., Aikens, A., Christoforides, A., and Cutler, B. (2019). Lichen: Customizable, Open Source Plagiarism Detection in Submittity. In *Proceedings of the 50th ACM Technical Symposium on Computer Science Education - SIGCSE '19*, pages 1270–1270, Minneapolis, MN, USA. ACM Press
- Aikens, A., Kumar, G., Patel, S., Maicus, E., Peveler, M., and Cutler, B. (2019). Facilitating Discussion-Based Grading and Private Channels via an Integrated Forum. In *Proceedings of the 50th ACM Technical Symposium on Computer Science Education - SIGCSE '19*, pages 1270–1270, Minneapolis, MN, USA. ACM Press
- Peveler, M., Kephart, J., and Su, H. (2018). Reagent: Converting ordinary webpages into interactive software agents. Poster presented at IBM AI Week
- Peveler, M., Maicus, E., Holzbauer, B., and Cutler, B. (2018). Analysis of container based vs. jailed sandbox autograding systems. Poster presented at ACM SIGCSE 2018
- Breese, S., Maicus, E., Peveler, M., and Cutler, B. (2018). Correlation of a flexible late day policy with student stress and programming assignment plagiarism. Poster presented at ACM SIGCSE 2018
- Peveler, M., Srivastava, B., Talamadupula, K., Govindarajulu, N. S., Sen, A., Bringsjord, S., and Su, H. (2017). Towards cognitive-and-immersive systems: Experiments in a shared (or common) blockworld framework. Poster presented at IBM Cognitive Colloquium
- Tyler, J., Peveler, M., and Cutler, B. (2017). A flexible late day policy reduces stress and improves learning. Poster presented at SIGCSE Conference
- Peveler, M., O'Neil, K., Sen, A., Ghosh, R., Dong, B., and Bringsjord, S. (2016). The planning dilemma in cognitive computing for cisl's "cognitive boardroom". Poster presented at IBM Cognitive Colloquium
- Wong, A., Sihsobhon, B., Lindquist, M., Peveler, M., Cutler, B., Breese, S., Tran, E., Jung, J., and Shaw, B. (2016). User experience and feedback on the rpi homework submission server. Poster presented at ACM SIGCSE 2016
- Sen, A., Peveler, M., Marton, N., Ghosh, R., Licato, J., Radke, R. J., Woodstock, T.-K. A. E., and Bringsjord, S. (2015). Towards the cognitive classroom: Mathematical physics. Poster presented for CISL @ EMPAC Launch at RPI

## RESEARCH EXPERIENCE

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- **Cognitive and Immersive Systems** Cognitive and Immersive Systems Laboratory  
Fall 2016 - Ongoing  
*Research Assistant*
  - Explore resolution of intents and entities from multi-modal contexts.
  - Integrated several different spatial context systems for our cognitive room to allow alternative control schemes instead of traditional mouse/keyboard.
  - Act as technology liaison between RPI and IBM labs.
  - Helped redesign desktop based applications to large-scale wall displays.
  - Develop modules written in NodeJS and Python utilizing MongoDB, PostgreSQL, RabbitMQ, and Redis.
  - Develop module to handle creation and usage of domain trees across various scenarios.
  - Develop service and sensor discovery using combination of UDP and RabbitMQ.
  - Implemented usage of the formal logic, Cognitive Event Calculus, and related automated theorem prover and planner to model and reason over the theory of mind of agents within cognitive systems.
  - Creation of Cognitive Polygon Framework for definition of tasks and cognitive agents for tasks in Blockworld, Hyperproof, CLEVR, etc.
- **IBM - Brasil** Rio de Janeiro, Brasil  
September 2019 – December 2019  
*Pesquisador / Cientista - Junior (Junior Researcher)*
  - Developed a new digital sticky note tool for in-person design thinking meetings.
  - Created a multi-user pointing system utilizing cellphone sensors for large-scale wall displays.

- Investigated camera-based approach for interacting with large-scale wall displays using transparent markers and multiplexing.
- Created and ran several user studies judging effectiveness of designed interfaces based on NASA Task Load Index.
- Contributed 33 patches to the IBM Watson Node.js SDK libraries.

## WORK EXPERIENCE

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- **Rensselaer Polytechnic Institute** Troy, NY  
*Teaching Assistant* *Fall 2013 – Spring 2015*
  - Ran labs and held office hours for Computer Science I.
  - Acted as head TA for professor from Fall 2014 to Spring 2015.
  - As head TA, helped professor manage other TAs, setup submission and grading for HWs, labs, and tests, dealt with cheaters, and other miscellaneous tasks.
- **Pitney Bowes** Troy, NY  
*Software Development Intern* *June 2014 – Dec 2015*
  - Worked on fixing bugs and improving testing efforts of the Location Intelligence module of Spectrum Spatial.
  - Researched porting XML based test suites to native JUnit test suites.
  - Created JUnit extensions for parametrized testing to simplify adding new data providers for testing.
  - Implemented 9 functions to Spectrum Spatial's SQL dialect.
- **Media Technology Support Service at TCNJ** Ewing, NJ  
*User Support* *May 2011 - Jul 2013*
  - Assist teachers with any issues they have with media technology.
  - Diagnose and troubleshoot problems in media equipped classrooms.
  - Deliver and set up media technology for professors.

## PROJECTS

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- **Submittity** (<https://submittity.org>)
  - Written using PHP, Python, and C++ backed by PostgreSQL.
  - Open source programming assignment submission system developed at RPI.
  - Developed core technologies (DB, MVC pattern) using PHP for submission website.
  - Created installation and vagrant scripts making it easier for new developers to join project.
  - Develop and maintain Travis-CI automation tasks for testing and building project.
  - Help manage tasks and review work from undergraduates working on the project.
  - Mentor student as part of the Google Summer of Code 2018 on plagiarism detection module.
  - Integrate Docker into the autograding process next to existing jailed sandbox.
- **Forseti**: Open source automated theorem prover written in Python.