

# MICAH ELLIOT HALTER

📍 Atlanta, GA   📞 +1 704 490 9840   ✉ micah@mehalter.com   🌐 mehalter.com   🐱 git.mehalter.com/mehalter

## EDUCATION

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| JAN 2020 –<br>DEC 2021 | <b>Master of Science in Computer Science</b><br><i>Georgia Institute of Technology, Atlanta, GA.</i><br>- Specialization in Machine Learning   |
| AUG 2015 –<br>MAY 2019 | <b>Bachelor of Science in Computer Science</b><br><i>Georgia Institute of Technology, Atlanta, GA.</i><br>- Concentration in system architecture and theory<br>- Dean's List Fall 2015, Spring 2016, Fall 2016, Fall 2018, Spring 2019 |
| AUG 2017 –<br>DEC 2017 | <b>Bachelor of Science in Computer Science</b><br><i>Hong Kong University of Science and Technology, Hong Kong.</i><br>- Studied abroad  |

## PROFESSIONAL EXPERIENCE

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| JUN 2019 –<br>PRESENT  | <b>Georgia Tech Research Institute – Research Scientist</b><br><i>Atlanta, GA.</i><br>- Lead contributor to research projects sponsored by large entities DARPA, NIH, and ONR<br>- Wrote and published peer reviewed conference and journal papers to communicate research findings to the greater research community<br>- Contributed and participated in white paper and proposal writing to bring in more funding for new and on-going projects<br>- Delivered applied research projects to sponsors such as source code, web applications, and technical reports<br>- Used NetFlow data and machine learning in Python and scikit-learn to detect compromised machines on a network based off known blacklists and whitelists of IP addresses  |
| JAN 2016 –<br>MAY 2019 | <b>Georgia Tech Research Institute – Undergraduate Research Assistant</b><br><i>Atlanta, GA.</i><br>- Lead contributor to research projects sponsored by large entities NIH and ONR<br>- Wrote and published a peer reviewed journal paper to communicate research findings to the greater research community<br>- Delivered applied research projects to sponsors such as source code, web applications, and technical reports<br>- Predicting crimes in Portland, OR using temporal and geographic features derived from crime statistics and GIS data   |
| MAY 2016 –<br>AUG 2017 | <b>The Boeing Company – Software Development Intern</b><br><i>Kent, WA.</i><br>- Developed a security auditing tool suite for Red Hat Enterprise Linux 7 to maintain hardened security on classified servers<br>- Developed a web application in C#, HTML, and JavaScript to view and analyze network traffic<br>- Developed several system administration scripts as needed by team members to complete tasks such as emailing system logs and automatic server backups<br>- Organized and led a software development team to create a minimum viable product of a Kanban board web application<br>- Pitched the Kanban board prototype to management to form a team to continue development of the application after I left<br>- Documented and executed an upgrade plan for the company's identity management servers<br>- Developed an Outlook-integrated conference room mapping tool in C# |

## PROJECTS

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### **SemanticModels.jl**

*Georgia Tech Research Institute.*

- Research funded by the Defense Advanced Research Projects Agency (DARPA)
- A category theory approach to defining metamodeling tasks for representing and composing scientific models
- A system for extracting semantic information from scientific code and reconciling it with conceptual descriptions to build a knowledge graph

### **Petri.jl**

*Software Development.*

- A stochastic petri net modeling framework for the Julia programming language
- Allow petri nets to be compiled to Gillespie and differential equation based simulations

### **Corsair Database**

*Georgia Tech Research Institute.*

- Research funded by the Office of Naval Research (ONR)
- Developed a web application for viewing and analyzing sonar SAS data using Go, Python, and PostgresDB deployed with Docker and Drone.io
- Engineered a database for managing scientific experiments to utilize the speed and efficiency of using a rigid relational database, while being flexible enough to handle the changing data requirements of scientific experimentation

## RESEARCH

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### Funding

- 2019 – 2021 Performer, Office of Naval Research, *MCM Situational Awareness*, ≈\$375K
- 2018 – 2020 Task Lead, DARPA, *Artificial Intelligence Exploration - Automating Scientific Knowledge Extraction*, ≈\$1M
- 2018 – 2019 Performer, Air Force, *Network Risk Indication*, ≈\$135K
- 2016 – 2019 Performer, Office of Naval Research, *Performance Estimation of Underwater MCM Operations*, ≈\$990K
- 2015 – 2019 Performer, Office of Naval Research, *Automation for UxV-based Mine Countermeasures*, \$540K

### Peer Reviewed Conference Publications

- *A Compositional Framework for Scientific Model Augmentation*, **Micah Halter**, Christine Herlihy, James Fairbanks, Applied Category Theory, 2019

### Under Review Journal Publications

- *Accelerating Automatic Target Recognition Performance Estimation with a Relational Database for Synthetic Aperture Sonar*, James Fairbanks\*, **Micah Halter\***, Trevor Goodyear, Matthew Jackson, Brian O'Donnell, John Wilcher, Navy Journal of Underwater Research, 2018

### Under Review Conference Publications

- *SemanticModels.jl: A Julia Package for Scientific Model Augmentation*, **Micah Halter**, Sreenath Raparti, Kun Cao, Christine Herlihy, James Fairbanks, JuliaCon, 2019

### Posters

- *SemanticModels.jl: A Framework for Automatic Composition of Scientific Models Across Domains*, Micah Halter, Kun Cao, James Fairbanks, SIAM Conference on Parallel Processing for Scientific Computing, Feb 2020
- *Scientific Knowledge Extraction, Augmentation & Analysis*, Micah Halter, James Fairbanks, Eric Davis, Clayton Morrison, Ryan Wright, DARPA Demo Day, Sep 2019

## COMMUNITY INVOLVEMENT

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AUG 2015 –  
MAY 2019

### Georgia Tech's Men's Ultimate Frisbee

*Georgia Institute of Technology.*

- Help with recruitment and teaching new players

## LANGUAGES & SKILLS

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Full Stack Development • Deep Learning • System Administration • Database Design and Management  
High Performance Computing • Machine Learning • Functional Programming • Category Theory  
C/C++, Python, Go, Julia, Java, Scala, Perl, Bash, SQL, MySQL, PostgreSQL, LaTeX, HTML, CSS, JavaScript