

# Shigeru Imai

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<https://imais.github.io>

## SUMMARY

Post-doctoral researcher with a demonstrated publication record of cloud computing research. Skilled in cloud resource management (Amazon Web Services, Google Cloud), performance modeling of distributed data processing applications, benchmark automation, time-series analysis, and resource scheduling.

## EDUCATION

### **Rensselaer Polytechnic Institute, Troy, NY**

<i>Ph.D. Computer Science</i>	GPA 3.73	May 2018
<i>M.S. Computer Science</i>	GPA 3.72	May 2012

**Relevant Coursework** : Machine Learning, Computer Algorithms, Operating Systems, Programming Languages, Computability and Complexity, Cloud Computing, Network Programming, Database Systems, Parallel Computing, Interactive Arts Programming, Bioinformatics & Computational Biology.

## SKILLS

Programming languages: Java, C, Python, SQL, JavaScript, Octave, Bash  
Data processing frameworks: Apache Storm, Spark, Hadoop, Kafka  
Domain-specific programming language design and development: JavaCC

## PROFESSIONAL EXPERIENCE

### **Post-doctoral Researcher** June 2018 - Present

*Department of Computer Science, Rensselaer Polytechnic Institute, Troy, NY*

- Research a geo-distributed data processing framework

### **Research Assistant** June 2012 - May 2018

*Department of Computer Science, Rensselaer Polytechnic Institute, Troy, NY*

- Researched a cost-efficient cloud computing resource management framework and saved up to 49% cost compared to a conventional static scheduling technique
- Researched a new programming language for spatio-temporal data streaming applications to facilitate the development of smarter flight systems (local news exposures: [Troy Record](#), [Albany Times Union](#))

### **Software Engineering Intern** June 2016 - August 2016

*Onshape, Inc., Cambridge, MA*

- Assisted in building data warehouse software containing large volumes of metrics data
- Analyzed collected metrics data using a web-based visualization tool
- Worked in a team of about 15 people with agile software development style

### **Research Assistant** June 2014 - August 2014

*Department of Science and Technology Studies, Rensselaer Polytechnic Institute, Troy, NY*

- Integrated a 3D system functionality into the C-Snap visual programming platform using three.js

## SELECTED PUBLICATIONS ([Google Scholar](#), [Full publication list](#))

### Cloud Computing

1. **Shigeru Imai**, Stacy Patterson, and Carlos A. Varela. “Uncertainty-Aware Elastic Virtual Machine Scheduling for Stream Processing Systems,” *In 18th IEEE/ACM International Symposium on Cluster, Cloud and Grid Computing (CCGrid 2018)*, Washington, DC, May 2018.
2. **Shigeru Imai**, Stacy Patterson, and Carlos A. Varela. “Maximum Sustainable Throughput Prediction for Data Stream Processing over Public Clouds,” *In 17th IEEE/ACM International Symposium on Cluster, Cloud and Grid Computing (CCGrid 2017)*, Madrid, Spain, May 2017.
3. **Shigeru Imai**, Stacy Patterson, and Carlos A. Varela. “Cost-Efficient Elastic Stream Processing Using Application-Agnostic Performance Prediction,” *In 16th IEEE/ACM International Symposium on Cluster, Cloud and Grid Computing (CCGrid 2016): Doctoral Symposium*, Cartagena, Colombia, May 2016. *Best Doctoral Symposium Paper Award*.
4. **Shigeru Imai**, Thomas Chestna, and Carlos A. Varela. “Accurate Resource Prediction for Hybrid IaaS Clouds Using Workload-Tailored Elastic Compute Units,” *In 6th IEEE/ACM International Conference on Utility and Cloud Computing (UCC 2013)*. Dresden, Germany, December 2013.
5. **Shigeru Imai**, Thomas Chestna, and Carlos A. Varela, “Elastic Scalable Cloud Computing Using Application-Level Migration,” *in 5th IEEE/ACM International Conference on Utility and Cloud Computing (UCC 2012)*. Chicago, Illinois, USA, November 2012.

### Air Flight Safety

1. **Shigeru Imai**, Erik Blasch, Alessandro Galli, Wennan Zhu, Frederick Lee, and Carlos A. Varela. “Airplane Flight Safety Using Error-Tolerant Data Stream Processing,” *IEEE Aerospace and Electronics Systems Magazine*, 32(4), 2017.
2. **Shigeru Imai**, Sida Chen, Wennan Zhu, and Carlos A. Varela. “Dynamic Data-Driven Learning for Self-Healing Avionics,” *Cluster Computing*, November 2017, ISSN:1573-7543.
3. **Shigeru Imai**, Richard Klockowski, and Carlos A. Varela. “Self-Healing Spatio-Temporal Data Streams Using Error Signatures,” *In 2nd International Conference on Big Data Science and Engineering (BDSE 2013)*. Sydney, Australia, December 2013.

## AWARDS/HONORS

- The Robert McNaughton Prize, Rensselaer Polytechnic Institute (2018)
  - The prize is given to an outstanding Ph.D. student in the Computer Science Department at Rensselaer Polytechnic Institute
- Amazon Web Services Cloud Credits for Research (2011-2012, 2013-2015, 2016-2018)
- CCGrid Student Travel Grant (2015, 2017, 2018)
- Yamada Corporation Fellowship, Rensselaer Polytechnic Institute (2012 - 2013)
- ACM SIGSPATIAL International Conference - Student Travel Grant (2012)