

# Shigeru Imai

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<https://imais.github.io>

## Summary of Qualifications

- Post-doctoral researcher with a demonstrated publication record of cloud computing research
- 5+ years of experience in cloud resource management: AWS, Google Cloud
- 3+ years of experience in data processing frameworks: Apache Kafka, Storm, Spark, Hadoop
- Programming languages: Java, C (Proficient), Python, SQL, JavaScript, Octave, Bash (Familiar)
- Adaptive problem solver with the ability to communicate effectively

## EDUCATION

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

*Ph.D. Computer Science* GPA 3.73 May 2018

- Awarded the Robert McNaughton Prize for the best Ph.D. student in Computer Science

*M.S. Computer Science* GPA 3.72 May 2012

## PROFESSIONAL EXPERIENCE

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

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

- Research a geo-distributed IoT sensor data processing framework for fog computing with a simulated environment developed in Python

**Research Assistant** June 2012 - May 2018

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

- Researched a proactive cloud computing resource management framework using Apache Kafka and Storm with up to 128 virtual machines on AWS, and achieved 17% better Quality-of-Service (QoS) satisfaction rate compared to a conventional reactive scheduling approach
- Created a new programming language for spatio-temporal data streaming applications to facilitate the development of smarter flight systems with the associated run-time system developed in Java

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

*Onshape, Inc., Cambridge, MA*

- Assisted in building a data warehouse containing large volumes of metrics data on AWS
- Collected metrics data using Python and analyzed the 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 JavaScript with three.js

## AWARDS/HONORS

- Best Doctoral Symposium Paper Award, CCGrid (2016)
- Amazon Web Services Cloud Credits for Research (2011-2012, 2013-2015, 2016-2018)
- Google Cloud Platform Credit Award (2014-2015)
- Yamada Corporation Fellowship, Rensselaer Polytechnic Institute (2012 - 2013)

## 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**, Pratik Patel, and Carlos A. Varela. “Developing Software for the Cloud,” *Encyclopedia on Cloud Computing*. Chapter 50, Wiley, 2016.
5. **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.
6. **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.

### Mobile Computing

7. **Shigeru Imai** and Carlos A. Varela, “Light-Weight Adaptive Task Offloading from Smartphones to Nearby Computational Resources,” *in Research in Applied Computation Symposium (RACS 2011)*. Miami, Florida, November 2011.

### Air Flight Safety

8. **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.
9. **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.
10. **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.