

# Moustafa ABDELBAKY

447 SODA HALL, MC 1776, Berkeley, CA 94720-1776  
moustafa@eecs.berkeley.edu <https://people.eecs.berkeley.edu/~moustafa/>

## EDUCATION

---

- MAY 2017 Ph.D., ELECTRICAL & COMPUTER ENGINEERING, **Rutgers University**, New Brunswick, NJ  
Dissertation: "Programming and Managing Distributed Software-Defined Environments"  
Advisor: Prof. Manish PARASHAR
- MAY 2012 M.S., ELECTRICAL & COMPUTER ENGINEERING, **Rutgers University**, New Brunswick, NJ  
Thesis: "A Framework for Enabling High-end High Performance Computing Resources as a Service"  
Advisor: Prof. Manish PARASHAR
- MAY 2008 B.Sc., ELECTRICAL & COMPUTER ENGINEERING, **Rutgers University**, New Brunswick, NJ
- MAY 2008 B.Sc., COMPUTER SCIENCE, **Rutgers University**, New Brunswick, NJ

## RESEARCH INTERESTS

---

Distributed computing, software-defined environments, and machine learning to support large-scale, realtime, secure, and data-driven applications in Science, Big Data, and the Internet of Things (IoT).

## PROFESSIONAL EXPERIENCE

---

- |                     |   |
|---------------------|---|
| AUG 2017<br>PRESENT | Postdoctoral Scholar with Prof. David CULLER at<br>THE UNIVERSITY OF CALIFORNIA, BERKELEY<br>THE DEPARTMENT OF ELECTRICAL ENGINEERING AND COMPUTER SCIENCE<br><i>Berkeley, CA</i> <ul style="list-style-type: none"><li>○ Research on using machine learning for modeling, prediction, and control of smart buildings in the context of the Internet of Things.</li><li>○ Research on using a Blockchain-based decentralized authentication to enable secure CDNs.</li></ul>  |
| SEP 2009-JUL 2017   | Graduate Research Assistant with Prof. Manish PARASHAR at<br>RUTGERS UNIVERSITY<br>RUTGERS DISCOVERY INFORMATICS INSTITUTE (RDI <sup>2</sup> )<br>THE NSF CLOUD AND AUTONOMIC COMPUTING CENTER (NSFCAC)<br>THE APPLIED SOFTWARE SYSTEMS LABORATORY (TASSL)<br><i>Piscataway, NJ</i> <ul style="list-style-type: none"><li>○ Research on autonomic computing, software-defined environments, and federated computing for science and engineering applications.</li><li>○ Investigated the use of cloud computing abstractions to enable high performance computing as a service. The resulting framework (iCode) received an international award and was featured in multiple media outlets [PC2].</li><li>○ Performed research on distributed interactive steering and collaborative visualization environment.</li></ul> |

SUMMER 2015	<p>Research Intern at IBM T. J. WATSON RESEARCH CENTER <i>Yorktown Heights, NY</i></p> <ul style="list-style-type: none"> <li>Developed a novel method for deploying Docker containers across multiple clouds and data centers. The resulting framework (C-Ports) received an international award and was featured in multiple media outlets [PC1].</li> </ul>
SUMMERS 2010, 2011, 2012, 2014	<p>Research Intern at IBM T. J. WATSON RESEARCH CENTER <i>Cambridge, MA</i></p> <ul style="list-style-type: none"> <li>Research on providing scientific software as a service.</li> <li>Research on building elastic data assimilation as a service.</li> <li>Research on providing IBM Blue Gene supercomputers as a service.</li> <li>Research on High Performance Cloud Computing.</li> </ul>
JAN-OCT 2009	<p>Software Developer at PRINCETON PLASMA PHYSICS LABORATORY (PPPL) PRINCETON UNIVERSITY <i>Princeton, NJ</i></p> <ul style="list-style-type: none"> <li>Contributed to the development of ELVis, a Scientific Graphics software for Visualization and Monitoring.</li> </ul>
SEP 2008-AUG 2009	<p>Research Assistant with Prof. Manish PARASHAR at RUTGERS UNIVERSITY THE APPLIED SOFTWARE SYSTEMS LABORATORY (TASSL) <i>Piscataway, NJ</i></p> <ul style="list-style-type: none"> <li>Developed a portal for online risk analytics using CometCloud.</li> </ul>
JAN 2008-AUG 2009	<p>Undergraduate Research Assistant with Prof. Grigore BURDEA at RUTGERS UNIVERSITY CENTER FOR ADVANCED INFORMATION PROCESSING THE HUMAN-MACHINE INTERFACE LABORATORY <i>Piscataway, NJ</i></p> <ul style="list-style-type: none"> <li>Research on using the PlayStation 3 and cell phones for mental and physical patient rehabilitation in collaboration with Indiana University School of medicine.</li> </ul>
AUG 2007-JAN 2008	<p>Undergraduate Research Assistant with Prof. Michael L. BUSHNELL at RUTGERS UNIVERSITY CENTER FOR ADVANCED INFORMATION PROCESSING <i>Piscataway, NJ</i></p> <ul style="list-style-type: none"> <li>Research on Nano-Technology (Single Electron Transistors).</li> </ul>
SUMMER 2007	<p>Systems Engineer Intern at JOHN WILEY &amp; SONS INC. <i>Somerset, NJ</i></p> <ul style="list-style-type: none"> <li>Installed and maintained VMware servers, IBM blade and standalone servers.</li> </ul>

## AWARDS AND HONORS

---

June 2017	Student Travel Award, the 26 <sup>th</sup> ACM International Symposium on High-Performance Parallel and Distributed Computing (HPDC17), Washington D.C., USA
June 2017	Ph.D. Forum Award, the 31 <sup>st</sup> IEEE International Parallel & Distributed Processing Symposium (IPDPS 2017), Orlando, FL, USA
June 2017	Student Travel Award, the 31 <sup>st</sup> IEEE International Parallel & Distributed Processing Symposium (IPDPS 2017), Orlando, FL, USA
May 2017	Student Travel Award, the 17 <sup>th</sup> IEEE/ACM International Symposium on Cluster, Cloud and Grid Computing (CCGrid 2017), Madrid, Spain
May 2017	Graduate Program Academic Achievement Award, Department of Electrical & Computer Engineering, Rutgers University
December 2015	Winner of the Cloud Challenge Award (Category 2), the 8 <sup>th</sup> IEEE/ACM International Conference on Utility and Cloud Computing (UCC 2015), St. Raphael Resort, Limassol, Cyprus
November 2015	Student Travel Award, the 28 <sup>th</sup> International Conference for High Performance Computing, Networking, Storage and Analysis (SC15), Austin, TX, USA
2013-2014	IBM Ph.D. Scholarship Award
2012-2013	IBM Ph.D. Fellowship Award
November 2012	Student Travel Award, the 25 <sup>th</sup> International Conference for High Performance Computing, Networking, Storage and Analysis (SC12), Salt Lake City, UT, USA
2011-2012	IBM Ph.D. Fellowship Award
November 2011	Student Travel Award, the 24 <sup>th</sup> International Conference for High Performance Computing, Networking, Storage and Analysis (SC11), Seattle, WA, USA
May 2011	Winner of the 4 <sup>th</sup> IEEE International Scalable Computing Challenge (SCALE), 11 <sup>th</sup> IEEE/ACM International Symposium on Cluster, Cloud and Grid Computing (CCGrid 2011), Newport Beach, CA, USA
2009	IEEE ETA KAPPA NU Electrical & Computer Engineering Honor Society
Spring 2008	Rutgers Computing Facilities - Consultant of the Semester
April 2007	Rutgers Computing Facilities - Consultant of the Month

## PRESS COVERAGE

---

- PC.1 C-Ports: a prototype framework developed with IBM T.J. Watson Research Center won the [UCC Challenge award](#) and was featured in [Fortune magazine](#), [IBM Developer Works](#), [Docker Weekly Blog](#), [First Post](#), [Reefeed](#), [Cloud FAQs](#), [Container House](#), [New Relic](#), [Drag Plus](#), [Docker Scoop](#), and [Mycamms](#).
- PC.2 [CometCloud/iCode](#): a prototype framework developed with IBM T.J. Watson Research Center and UT-Austin won the [SCALE Challenge](#) and was featured in [ACM TechNews](#), [Communications of the ACM](#), [HPC Wire](#), [insideHPC](#), [Futurity](#), [RutgersToday](#), [Media Newswire](#), [ComputerWorld-Australia](#), [ComputerWorld-New Zealand](#), [Network World](#), (Also in [Spanish](#) and [Polish](#)), [IT World](#), [MacWorld](#), [CIO](#), [CIO Peru](#), [BetaNews](#) (English Translation [here](#)), [InfoWorld](#), [idealog \(NZ\)](#), [Primeur Magazine](#), [OSP](#) (English Translation [here](#)), [GenomeWeb](#), and [PC World \(Middle East\)](#).
- PC.3 A project for using virtual reality for tele-rehabilitation was featured in [Science Daily](#) ([here](#), and [here](#)), [Rutgers News](#), [Red Orbit](#), [Loop](#), [Medical Mal Blog](#), [EurekAlert](#), and [Media dis&dat](#).

## PATENTS

---

- P.1 Burdea, G., AbdelBaky, M., and Rabin, B., 2014. Periodic evaluation and telerehabilitation systems and methods. U.S. Patent 8,758,020.
- P.2 "Idle Datacenter Resource Donation," Provisional Patent Filed, Full Patent Pending.

## PUBLICATIONS

---

### Journals

- J.1 AbdelBaky, M., Diaz-Montes, J. and Parashar, M., 2017. Software-Defined Environments for Science & Engineering. The International Journal of High Performance Computing Applications, 1094342017710706.
- J.2 Diaz-Montes, J., AbdelBaky, M., Zou, M. and Parashar, M., 2015. CometCloud: Enabling Software-Defined Federations for End-to-End Application Workflows. IEEE Internet Computing, 19(1), pp.69-73. IEEE.
- J.3 Parashar, M., AbdelBaky, M., Rodero, I. and Devarakonda, A., 2013. Cloud Paradigms and Practices for Computational and Data-enabled Science and Engineering. IEEE Computing in Science & Engineering (CiSE), 15(4), pp.10-18. IEEE.
- J.4 AbdelBaky, M., Parashar, M., Kim, H., Jordan, K.E., Sachdeva, V., Sexton, J., Jamjoom, H., Shae, Z.Y., Pencheva, G., Tavakoli, R. and Wheeler, M.F., 2012. Enabling High-performance Computing as a Service. IEEE Computer, 45(10), pp.72-80. IEEE. **Published as the featured research in October 2012.**
- J.5 Huber, M., Rabin, B., Docan, C., Burdea, G.C., AbdelBaky, M. and Golomb, M.R., 2010. Feasibility of Modified Remotely Monitored In-home Gaming Technology for Improving Hand Function in Adolescents With Cerebral Palsy. IEEE Transactions on Information Technology in Biomedicine, 14(2), pp.526-534.
- J.6 Golomb, M.R., McDonald, B.C., Warden, S.J., Yonkman, J., Saykin, A.J., Shirley, B., Huber, M., Rabin, B., AbdelBaky, M., Nwosu, M.E. and Barkat-Masih, M., 2010. In-home Virtual Reality Videogame Telerehabilitation in Adolescents With Hemiplegic Cerebral Palsy. Archives of physical medicine and rehabilitation, 91(1), pp.1-8. **Published as the leading paper in January 2010 and featured as the hottest article in March 2010.**

### Conference Proceedings & Workshops

- C.1 Zamani, A.R., AbdelBaky, M., Balouek-Thomert, D., Villalobos, J.J., Rodero, I. and Parashar, M., 2017, November. Submarine: A Subscription-based Data Streaming Framework for Integrating Large Facilities and Advanced Cyberinfrastructure. The 8<sup>th</sup> International Workshop on Data-Intensive Computing in the Clouds, in conjunction with the 30<sup>th</sup> International Conference for High Performance Computing, Networking, Storage and Analysis (SC17), Denver, CO, USA. ACM.
- C.2 AbdelBaky, M., Zou, M., Zamani, A.R., Renart, E., Diaz-Montes, J., and Parashar, M., 2017. Computing in the Continuum: Combining Pervasive Devices and Services to Support Data-driven Applications. To appear in the 37<sup>th</sup> IEEE International Conference on Distributed Computing Systems (ICDCS 2017), Atlanta, GA, USA. IEEE.
- C.3 AbdelBaky, M., Diaz-Montes, J. and Parashar, M., 2017. Towards Distributed Software-Defined Environments. In Proceedings of the 2017 IEEE/ACM 17<sup>th</sup> International Symposium on Cluster, Cloud and Grid Computing (CCGrid), Madrid, Spain, (pp. 703-706). IEEE.
- C.4 AbdelBaky, M., Diaz-Montes, J., Unuvar, M., Romanus, M., Steinder, M., Rodero, I. and Parashar, M., 2017. Enabling Distributed Software-Defined Environments Using Dynamic Infrastructure Service

Composition. In Proceedings of the 2017 IEEE/ACM 17<sup>th</sup> International Symposium on Cluster, Cloud and Grid Computing (CCGrid), Madrid, Spain, (pp. 274-283). IEEE.

- C.5 Wang, J., AbdelBaky, M., Diaz-Montes, J., Purawat, S., Parashar, M. and Altintas, I., 2016, June. Kepler+ CometCloud: Dynamic Scientific Workflow Execution on Federated Cloud Resources. In Proceedings of the 2016 3<sup>rd</sup> Workshop on Advances in the Kepler Scientific Workflow System and Its Applications. In conjunction with the International Conference on Computational Science (ICCS), San Diego, CA, USA, 80, (pp.700-711). Procedia Computer Science.
- C.6 AbdelBaky, M., Unuvar, M., Diaz-Montes, J., Parashar, M. and Steinder, M., 2015, December. Docker Containers Across Multiple Clouds and Data Centers. In Proceedings of the 2015 IEEE/ACM 8<sup>th</sup> International Conference on Utility and Cloud Computing (UCC), St. Raphael Resort, Limassol, Cyprus, (pp. 368-371). IEEE. **Winner of the 2015 Cloud Challenge Award – Category 2.**
- C.7 AbdelBaky, M., Diaz-Montes, J., Zou, M. and Parashar, M., 2015, June. A Framework for Realizing Software-Defined Federations for Scientific Workflows. In Proceedings of the 2<sup>nd</sup> International Workshop on Software-Defined Ecosystems co-located with the 24<sup>th</sup> ACM International Symposium on High-Performance Distributed Computing (HPDC), Portland, OR, USA, (pp. 7-14). ACM.
- C.8 Qi, X., Xing, F., Ghadge, M., Rodero, I., AbdelBaky, M., Parashar, M., Sadimin, E., Foran, D.J. and Yang, L., 2012, October. Content-based Image Retrieval on Imaged Peripheral Blood Smear Specimens using High Performance Computation. In Proceedings of Data- & Compute-Intensive Clinical & Translational Imaging Applications workshop. In conjunction with the 15<sup>th</sup> International Conference on Medial Image Computing and Computer Assisted Intervention (DICTA-MICCAI), Nice, France, (pp. 51-60).
- C.9 AbdelBaky, M., Kim, H., Rodero, I. and Parashar, M., 2012, June. Accelerating MapReduce Analytics Using CometCloud. In Proceedings of the 2012 IEEE 5<sup>th</sup> International Conference on Cloud Computing (IEEE CLOUD)– Applications & Experience Track, Honolulu, HI, USA, (pp. 447-454). IEEE.
- C.10 Kim, H., AbdelBaky, M. and Parashar, M., 2009, October. CometPortal: A Portal for Online Risk Analytics Using CometCloud. In Proceedings of the 18<sup>th</sup> International Conference on Computing Theory and Applications (ICCTA), Alexandria, Egypt.
- C.11 Golomb, M.R., Barkat-Masih, M., Rabin, B., AbdelBaky, M., Huber, M. and Burdea, G., 2009, June. Eleven Months of Home Virtual Reality Telerehabilitation-Lessons Learned. In Proceedings of 2009 Virtual Rehabilitation International Conference, Haifa, Israel, (pp. 23-28). IEEE.
- C.12 Huber, M., Rabin, B., Docan, C., Burdea, G., Nwosu, M.E., AbdelBaky, M. and Golomb, M.R., 2008, August. PlayStation 3-based Tele-rehabilitation for Children With Hemiplegia. In 2008 Virtual Rehabilitation International Conference, Vancouver, Canada, (pp. 105-112). IEEE.

#### **Invited Papers & Research Reports**

- I.1 Zamani, A.R., AbdelBaky, M., Balouek-Thomert, D., Rodero, I. and Parashar, M., 2017, October. Supporting Data-driven Workflows Enabled by Large Scale Observatories. The First International Workshop on Workflow Science (WoWS 2017), co-located with the 13<sup>th</sup> IEEE International Conference on eScience (eScience 2017), Auckland, New Zealand. IEEE.
- I.2 Parashar, M., AbdelBaky, M., Zou, M., Zamani, A.R. and Diaz-Montes, J., 2015, June. Realizing the Potential of IoT Using Software-Defined Ecosystems. In Proceedings of the 2015 IEEE 8<sup>th</sup> International Conference on Cloud Computing (IEEE CLOUD), New York, NY, USA, (pp. 1149-1158). IEEE.
- I.3 AbdelBaky, M., Diaz-Montes, J., Johnston, M., Sachdeva, V., Anderson, R.L., Jordan, K.E. and Parashar, M., 2014, October. Exploring HPC-based Scientific Software as a Service Using CometCloud. In Proceedings

of the 2014 International Conference on Collaborative Computing: Networking, Applications and Worksharing (CollaborateCom), Miami, FL, USA, (pp. 35-44). IEEE.

- I.4 Diaz-Montes, J., AbdelBaky, M., Zou, M. and Parashar, M., 2014, June. Software-Defined Federated Cyber-infrastructure for Science and Engineering. In Proceedings of the 2014 ACM international workshop on Software-Defined Ecosystems co-located with the 23<sup>rd</sup> ACM International Symposium on High-Performance Distributed Computing (HPDC), Vancouver, Canada, (pp. 9-12). ACM.
- I.5 AbdelBaky, M., 2012. Enabling High-End High Performance Computing Resources as a Service: A Framework Implementation. LAP Lambert Academic Publishing.
- I.6 Parashar, M., AbdelBaky, M., Rodero, I. and Devarakonda, A., 2012. Cloud Paradigms and Practices for CDS&E. Rep. Print. Cloud and Autonomic Computing Center Research Report.

## PRESENTATIONS

---

### Invited Talks

- PIT.1 AbdelBaky, M. and Panagopoulos, A.A., 2018, January. Using Reinforcement Learning in Smart Buildings. The RISE Winter Retreat, Monterey, CA, USA.
- PIT.2 AbdelBaky, M. 2017, December. Programming and Managing Distributed Software-Defined Environments. A part of the BETS Group Seminars, University of California, Berkeley, CA, USA.
- PIT.3 AbdelBaky, M., Panagopoulos, A.A., and Fierro G, 2017, October. Exploring Machine Learning Opportunities in the Context of IoT. A part of the RISE Lab Seminars, University of California, Berkeley, CA, USA.
- PIT.4 Parashar, M. and AbdelBaky, M., 2014, August. Exploring Computational Frameworks For Future Computational Chemistry. A part of the "The Future of Computational Chemistry," Division of Physical Chemistry, 248<sup>th</sup> ACS National Meeting, San Francisco, CA, USA.
- PIT.5 AbdelBaky, M., 2014, May. Running Value at Risk Analysis Using High Performance Computing as a Service. A part of the brown bag seminars at the Department of Management Science and Information Systems, Rutgers, The State University of New Jersey, Piscataway, NJ, USA.
- PIT.6 AbdelBaky, M. and Parashar, M., 2013, July. Building Platform as a Service for Scientific Applications. The Code and Data Interoperability Workshop, NSF Sustainable Software for Chemistry and Materials, Virginia Tech, Blacksburg, VA, USA.
- PIT.7 AbdelBaky, M., Parashar, M., and Jordan, K.E., 2013, March. Cloud Computing Practices for Scientific Computing Applications. A part of "the Computational Science in the Exascale Era - Challenges and Opportunities" Mini Symposium at the 2013 SIAM Conference on Computational Science and Engineering, Boston, MA, USA
- PIT.8 AbdelBaky, M., Watzl, J., and Parashar, M., 2012, April. Cloudy With A Chance Of Charity. A part of the "Entrepreneurship Helping Developing Economies" panel, Rutgers Entrepreneurship Day, New Brunswick, NJ, USA.
- PIT.9 AbdelBaky, M., 2010, November. Supercomputing: There's an App for that!. An invited talk at KAUST University Booth, International Conference for High Performance Computing, Networking, Storage and Analysis (SC10), New Orleans, LA, USA.

### Posters & Demonstrations

- PD.1 Fierro, G., Feinberg, V., Lengyel, D., Panagopoulos, A.A., Abdelbaky, M., Pritoni, M., Peffer, T., Gonzalez, J., Stoica, I., Katz, R., and Culler, D.E., 2018, January. If Reinforcement Learning is the Answer is Smart Building Control the Question? The RISE Winter Retreat, Monterey, CA, USA.
- PD.2 Devarakonda, A., AbdelBaky, M., Claus, B.L, Rodero, I., Haldeman, M., Parashar, M., 2012, May. Accelerating Asynchronous Replica Exchange on Large-Scale Distributed Heterogeneous HPC Resources. The 5<sup>th</sup> IEEE International Scalable Computing Challenge (SCALE), in conjunction with the 12<sup>th</sup> IEEE/ACM International Symposium on Cluster, Cloud and Grid Computing, Ottawa, Canada. **(Finalist)**.
- PD.3 Kim, H., AbdelBaky, M., and Parashar, M., 2011, September. Enabling Science and Engineering Workflows on Dynamically Federated Cloud Infrastructure using CometCloud. In China-US Software Workshop, KIAA Institute, Peking University, Beijing, China.
- PD.4 AbdelBaky, M., Parashar, M., Kim, H., Jordan, K.E., Sachdeva, V., Sexton, J., Jamjoom, H., Shae, Z.Y., Pencheva, G., Tavakoli, R. and Wheeler, M.F., 2011, May. A Scalable Ensemble-based Oil-Reservoir Simulations using Blue Gene/P-as-a-Service. The 4<sup>th</sup> IEEE International Scalable Computing Challenge (SCALE), in conjunction with the 11<sup>th</sup> IEEE/ACM International Symposium on Cluster, Cloud and Grid Computing at Newport Beach CA, USA. **(1st Place)**.
- PD.5 AbdelBaky, M., Jordan, K.E., Parashar, M., and Sachdeva, V., 2010, November. Cloudy with a Chance of Supercomputing: A Framework for Enabling Supercomputing Resources as HPC Clouds. In Early Adopters PhD Workshop 2010, International Conference for High Performance Computing, Networking, Storage and Analysis (SC10), New Orleans, LA, USA.
- PD.6 AbdelBaky, M., Parashar, M. and Jordan, K.E., 2010, November. CO2 Sequestration on HPC Clouds. International Conference for High Performance Computing, Networking, Storage and Analysis (SC10), New Orleans, LA, USA.
- PD.7 AbdelBaky, M., Parashar, M. and Jordan, K.E., 2009, November. System Level Acceleration and Interactive Supercomputing. International Conference for High Performance Computing, Networking, Storage and Analysis (SC09), Portland, OR, USA.

### Tutorials

- PT.1 Diaz-Montes, J., AbdelBaky, M. and Parashar, M., 2015, September. Enabling Software-Defined Federations using CometCloud. The 9<sup>th</sup> IEEE International Conference on Self-Adaptive and Self-Organizing Systems (SASO), Cambridge, MA, USA.
- PT.2 Parashar, M. and AbdelBaky, M., 2012, July. Federating HPC, Cyber-infrastructure and Clouds using CometCloud. Virtual School of Computational Science & Engineering Summer School, Bloomington, IN, USA.
- PT.3 AbdelBaky, M., Kim, H., Rodero, I. and Parashar, M., 2012, May. Developing and Deploying Applications on Federated Clouds using CometCloud. The 12<sup>th</sup> IEEE/ACM International Symposium on Cluster, Cloud and Grid Computing (CCGrid), Ottawa, Canada.

## PROFESSIONAL SERVICE

---

Workshop Proceedings Vice Chair	The 32 <sup>nd</sup> IEEE International Parallel & Distributed Processing Symposium (IPDPS 2018), Vancouver, Canada
Program Committee Member	The First International Workshop on Workflow Science (WoWS 2017) in conjunction with the 13 <sup>th</sup> IEEE eScience Conference in Auckland, New Zealand
Student Volunteer	The 31 <sup>st</sup> IEEE International Parallel & Distributed Processing Symposium (IPDPS 2017), Orlando, FL, USA
Student Volunteer	The 28 <sup>th</sup> International Conference for High Performance Computing, Networking, Storage and Analysis (SC15), Austin, TX, USA
Student Volunteer	The 22 <sup>nd</sup> ACM International Symposium on High-Performance Parallel and Distributed Computing (HPDC13), New York, NY, USA
Student Volunteer	The 25 <sup>th</sup> International Conference for High Performance Computing, Networking, Storage and Analysis (SC12), Salt Lake City, UT, USA
Student Volunteer	The 24 <sup>th</sup> International Conference for High Performance Computing, Networking, Storage and Analysis (SC11), Seattle, WA, USA

## PROFESSIONAL AFFILIATION

---

2015 - Present	Association for Computing Machinery (ACM)
2012 - Present	Society for Industrial and Applied Mathematics (SIAM)
2009 - Present	ETA KAPPA NU Electrical & Computer Engineering Honor Society
2005 - Present	Institute of Electrical and Electronics Engineers (IEEE)

## CONTRIBUTION TO SOFTWARE PROJECTS & SCIENTIFIC APPLICATIONS

---

- [CometCloud](#) is an autonomic framework for enabling real-world applications on dynamically federated, hybrid infrastructure integrating (public & private) clouds, data-centers and Grids.
- **Discover** is a virtual, interactive and collaborative PSE that enables geographically distributed scientists and engineers to collaboratively monitor, and control high performance parallel/distributed applications using web-based portals.
- **iCode** is a framework that integrates CometCloud and Discover and leverages Deep Cloud to enable on-demand deployment and elastic abstractions on top of supercomputers (e.g., IBM Blue Gene).
- **C-Ports** is a framework that leverages CometCloud to support the deployment of Docker containers across multiple clouds and data centers.
- **ElVis** is a Scientific Graphics for Visualization and Monitoring.
- Dissipative Particle Dynamics (DL-Meso) is a particle-based simulation technique, which focuses on the meso-scale behavior of molecular systems
- Parallel in Time and NWChem with Pacific Northwest National Laboratory
- Medical Image Registration and Histopathology Image Analysis with Rutgers Cancer Institute
- Kepler Scientific Workflow and Rapid Analysis of Multiple Metagenomes with a Clustering and Annotation Pipeline (RAMMCAP) with San Diego Supercomputer Center
- MapReduce Acceleration using the Rutgers Protein Data Bank
- Asynchronous Replica Exchange using IMPACT and AMBER with Rutgers CBMB



- o Ocean Modeling – enabling data assimilation as a service with MIT EAPS
- o Implicit Parallel Accurate Reservoir Simulator (IPARS) and Ensemble Kalman Filter (EnKF) with University of Texas at Austin
- o Using mobile devices for volunteer computing services [Uncertainty-aware Resource Provisioning in Mobile Computing Grids for Real-time In-situ Data Processing](#)
- o Designed and implemented a web-based stock prediction application
- o Designed and implemented a system to offload complex computation to IBM Blue Gene/P supercomputer from a MATLAB front-end running on a personal computer
- o Designed and implemented a real-time Value at Risk (VaR) simulation on a BlackBerry mobile device with Bloomberg LP
- o Designed and implemented a HTTP server
- o Designed and implemented a simplified banking system
- o Designed and implemented a restaurant automation system