



# Arnamoy Bhattacharyya

*Research Assistant in University of Toronto*

## Education and Experience

- 2015–current **Research Assistant**, *Electrical and Computer Engineering*, University of Toronto, *Putting context on cloud applications..*  
4.0/4.0
- 2018, 2017 **Intern**, *Smarking Inc.*, San Francisco, USA, *Anomaly Detection*.  
Winter
- 2017, 2016 **CAS Intern**, *IBM Toronto Software Lab*, Toronto, Canada, *VM Consolidation*.  
Summer
- 2013–2015 **Research Assistant**, *ETH Zürich*, Zurich, Switzerland, *Performance Modeling*.
- 2014 Summer **Research Aide Student**, *Argonne National Laboratory*, Illinois, USA, *Communication Modeling*.
- 2011–2013 **MSc**, *University of Alberta*, Edmonton, Canada, 3.8/4.0.
- 2007–2011 **BTech**, *West Bengal University of Technology*, West Bengal, India, 8.56/10.0.

## Master thesis

- title *Do Inputs Matter? Using Dependence Profiling to Evaluate Thread Level Speculation in Bluegene/Q*
- supervisors Prof. José Nelson Amaral

## Bachelor thesis

- title *Building a 4 bit Quantum ALU*
- supervisors Prof. Kishore Ghosh

## Projects

- Smarking '18 Built a Neural Network based prediction system for parking data, built an anomaly detection system for real time parking data.
- IBM '17 Built a Watson Conversation based Chatbot that can deliver system health information.
- Smarking '17 Built a web-service for anomaly detection in both streaming data and historical data.
- IBM '16 Built a VM migration system in cases of system anomaly.  
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- Smarking '16 Built a web based solution for automatically detecting anomalies in streaming data.  
 ETHZurich '15 Built a tool for automatically building performance model of applications.

## Publications and Theses

- IEEE CLOUD '18 Arnamoy Bhattacharyya, Seyed Ali Joker Jandaghi, Cristiana Amza: *Semantic-Aware Online Workload Characterization and Consolidation*, In Proceedings of IEEE International Conference of Cloud Computing, San Francisco, California
- LCPC '17 Arnamoy Bhattacharyya, Cristiana Amza: *ADLER: Adaptive Sampling for Precise Monitoring*, In Proceedings of 30th International Workshop for Language and Compilers for Parallel Computing, College Station, Texas
- CloudCom '17 Arnamoy Bhattacharyya, Stelios Sotiriadis, Cristiana Amza: *Online Phase Detection and Characterization of Cloud Applications*, In Proceedings of 9th IEEE International Conference on Cloud Computing Technology and Science, Hong Kong.
- CASCON '17 Arnamoy Bhattacharyya, Harsh Singh, Seyed Ali Joker Jandaghi, Cristiana Amza: *Online Detection of Anomalous Applications on the Cloud*, In Proceedings of IBM CASCON, Toronto, Canada
- INDIN '17 Arnamoy Bhattacharyya, Wei Han Wang, Christine Tsang, Cristiana Amza: *Semantic Aware Anomaly Detection in Real World Parking Data* In Proceedings of IEEE 15TH International Conference of Industrial Informatics, Emden, Germany
- VEE '17 Sahil Suneja, Ricardo Koller, Canturj Isci, Eyal de Lara, Ali Hashemi, Arnamoy Bhattacharyya, Cristiana Amza: *Safe Inspection of Live Virtual Machines*, In Proceedings of the 13th ACM SIGPLAN/SIGOPS International Conference on Virtual Execution Environments, Xi'an, China
- PPoPP '17 Arnamoy Bhattacharyya, Mike Dai Wang, Mihai Burcea, Yi Ding, Allen Deng, Sai Varikooty, Shafaaf Hossain, Cristiana Amza: *POSTER: HythTM: Extending the Applicability of Intel TSX Hardware Transactional Support*, In Proceedings of the 22nd ACM SIGPLAN Symposium on Principles and Practice of Parallel Programming, Austin, Texas
- CloudCom '16 Arnamoy Bhattacharyya, Seyed Ali Joker Jandaghi, Stelios Sotiriadis, Cristiana Amza: *Semantic Aware Online Detection of Resource Anomalies on the Cloud*, In Proceedings of 8th IEEE International Conference on Cloud Computing Technology and Science, Luxembourg.
- CNSM '16 Arnamoy Bhattacharyya, Harsh Singh, Seyed Ali Joker Jandaghi, Cristiana Amza: *Online Characterization of Buggy Applications Running on the Cloud*, In Proceedings of the 12th International Conference on Network and Service Management, Montreal, Canada.
- CASCON '16 Seyed Ali Joker Jandaghi, Arnamoy Bhattacharyya, Stelios Sotiriadis, Cristiana Amza: *Consolidation of Underutilized Virtual Machines to Reduce Total Power Usage*, In Proceedings of IBM CASCON, Toronto, Canada

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- A-Test '16 Arnamoy Bhattacharyya, Cristiana Amza *PredSym: Estimating Software Testing Budget for a Bug-free Release*, In Proceedings of the The 7th Workshop on Automating Test Case Design, Selection, and Evaluation (Co located with FSE '16), Seattle, Washington.
- PACT '15 Arnamoy Bhattacharyya, Grzegorz Kwasniewski, Torsten Hoefler *Using Compiler Techniques to Improve Automatic Performance Modeling*, In Proceedings of the 24th international conference on Parallel architectures and compilation techniques (PACT '15), San Francisco, California.
- CASCON '15 Arnamoy Bhattacharyya, Jose Nelson Amaral, Hal Finkel *Data-dependence Profiling to Enable Safe Thread Level Speculation*, In Proceedings of IBM CASCON, Toronto, Canada
- PACT '14 Arnamoy Bhattacharyya, Torsten Hoefler *PEMOGEN: Automatic Adaptive Performance Modeling during Program Runtime*, In Proceedings of the 23rd international conference on Parallel architectures and compilation techniques (PACT '14), Edmonton, Canada. 393-404
- PACT '13 Arnamoy Bhattacharyya *Do inputs matter?: using data-dependence profiling to evaluate thread level speculation in BG/Q*. In Proceedings of the 22nd international conference on Parallel architectures and compilation techniques (PACT '13). 401-402.
- PACT '12 Arnamoy Bhattacharyya *Using Combined Profiling to Decide When Thread Level Speculation is Profitable*. In Proceedings of the 21st international conference on Parallel architectures and compilation techniques (PACT '12). 483-484.
- Thesis Arnamoy Bhattacharyya *Do inputs matter?: using data-dependence profiling to evaluate thread level speculation in BG/Q*. Master's thesis, University of Alberta, Fall 2013.
- COSMIC '13 Arnamoy Bhattacharyya *Automatic Speculative Parallelization of Loops Using Polyhedral Dependence Analysis* In Proceedings of the 2013 International Workshop on Code Optimisation for Multi and Many Cores (co-located with CGO'13)

## Awards and Recognition

- Prestigious Rogers Fellowship recipient, University of Toronto, 2015–2019.
- Invited for an all-expenses paid trip to Google Europe PhD Student Summit on Compiler and Programming Technology 2014 in Munich, Germany.
- PACT 2014 Student Travel Grant Recipient.
- PACT 2013 Student Travel Grant Recipient.
- Prestigious Global Research Scholarship, University of Edinburgh, 2013 Recipient.
- Top 5% in Class in all Graduate Courses.
- Best Project in Graduate Level Compiler Course.
- Selected in Persistent Systems as a Software Engineer.(Among the selected 10 from almost 1000 candidates).
- Topper among 60 students in 4 Undergraduate Semesters.
- State Level Rank 25 among 6 hundred thousand students in XIIth standard.

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- State Level Rank 10 among 4 hundred thousand students in Xth standard.
- Received Governor's Award for Class X achievement.

## Professional Experience

|             |  |
|-------------|--|
| Winter 2016 | Teaching Assistant, Operating Systems, Distributed Systems, University of Toronto  |
| Fall 2015   | Teaching Assistant, Operating Systems, Parallel Programming, University of Toronto |
| Spring 2015 | Teaching Assistant, Operating Systems and Networks, ETH Zurich                     |
| Fall 2014   | Teaching Assistant, Design of Parallel and High-Performance Computing, ETH Zurich  |
| Spring 2014 | Teaching Assistant, Operating Systems and Networks, ETH Zurich                     |
| Fall 2013   | Research Assistant, Scalable Parallel Computing Lab, ETH Zurich                    |
| Summer 2013 | Research Assistant, CDOL, University of Alberta                                    |
| Winter 2013 | Teaching Assistant, CMPUT 379 (Operating Systems)                                  |
| Fall 2012   | Teaching Assistant, CMPUT 379 (Operating Systems)                                  |
| Summer 2012 | Research Assistant, CDOL, University of Alberta                                    |
| Winter 2012 | Teaching Assistant, CMPUT 379 (Operating Systems)                                  |
| Fall 2011   | Teaching Assistant, CMPUT 379 (Operating Systems)                                  |

## Graduate Coursework

- Computer System & Architecture.
- Parallel and Distributed Systems.
- Resource Allocation in Networks.
- Mining Software Repositories.
- Machine Learning in Optimizing Compilers.

## Relevant Skills

|            |  |
|------------|--|
| Languages  | C, C++, Java, Shell Script, C#, Python |
| Compilers  | LLVM, GCC                              |
| Simulators | SimpleScalar, Omnet++                  |
| Tools      | R, Matlab                              |

## References

- José Nelson Amaral (MSc Supervisor)  
Professor, University of Alberta, [jamaral@ualberta.ca](mailto:jamaral@ualberta.ca)
- Cristiana Amza (PhD Supervisor)  
Associate Professor, University of Toronto, [amza@ece.utoronto.ca](mailto:amza@ece.utoronto.ca)
- Torsten Hoefler (Internship Supervisor)  
Assistant Professor, ETH Zurich, [htor@inf.ethz.ch](mailto:htor@inf.ethz.ch)

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