Vilas Jagannath

Education

University of Illinois at Urbana-Champaign, USA May 2012
PhD in Computer Science
Advised by Prof. Darko Marinov and Prof. Gul Agha
Thesis research: Improved Regression Testing of Multithreaded Programs

University of Illinois at Urbana-Champaign, USA July 2010
Master of Science in Computer Science CGPA: 3.89
Thesis title: Reducing the Costs of Bounded-Exhaustive Testing

University of Illinois at Urbana-Champaign, USA December 2010
Graduate Certificate in Strategic Technology Management

University of Auckland, New Zealand March 2001 - November 2004
Bachelor of Engineering in Software Engineering CGPA: 7.95(A) - Highest Honors

Certification

Series 7 - General Securities Representative September 2012 - Ongoing

Industry Experience

Optiver US LLC Software Engineer
Chicago, USA July 2012 - Ongoing
Working on low-latency algorithmic options trading systems and performance monitoring infrastructure
Technologies & tools: C++, Python

Microsoft Research Research Intern
Mountain View, California, USA May 2010 - August 2010
Researched and developed support for debugging DryadLINQ applications
Technologies & tools: DryadLINQ, C#, and Visual Studio Automation Framework

Yahoo! Inc Software Engineering Intern
Champaign, Illinois, USA June 2008 - August 2008
Worked on a generic data generation tool for testing Yahoo!'s backend processes
Chosen as the best intern project in the 'Best Practices' category
Technologies & tools: Perl, Java, ASN, XSD, and Eclipse

Infosys Technologies Ltd - SETLabs Research Intern - Instep Global Internship
Bangalore, Karnataka, India May 2007 - August 2007
Researched techniques and tools for automating functional testing and estimating functional testing effort
Technologies & tools: Java, Digester, XMI, UML, RCP, SWT, and Eclipse

Kiwiplan NZ Ltd Software Engineer
Auckland, New Zealand November 2004 - July 2006
Worked on the Kiwiplan Transport Scheduling System
Technologies & tools: Java, JUnit, SOA, Jini, Hibernate, MySQL, JNI, GIS, Maven, and Rational Functional Tester

Kiwiplan NZ Ltd Software Engineering Intern
Auckland, New Zealand November 2003 - March 2004
Developed a customizable form navigation system for the Kiwiplan Enterprise Sales Processing system
Technologies & Tools: Visual Basic, Visual Studio, Visual Sourcesafe, RUP, and Code Generation from UML

Awards and Honors

Paper [7] was awarded the ACM SIGSOFT Distinguished Paper Award at ICSE 2010

Paper [7] was invited for submission to the ACM Transactions on Software Engineering and Methodology

Paper [8] was invited for submission to Wiley Software Testing, Verification and Reliability

Awarded ETAPS 2009 scholarship to present paper [10]

Elected best graduating Software Engineering student in 2004 (awarded by Auckland University Engineering Society)

Awarded the Kiwiplan Scholarship in 2004 for excellence in Computer Science and Software Engineering

On the Deans Honors List for 2002 and 2003

Other Activities

Senator, Illinois Student Senate	January 2010 - May 2012
Member of the Student Senate Committee on:	
Graduate and Professional Affairs	August 2009 - May 2012
International, Transfer and Non-Traditional Students	August 2010 - May 2012
Member of the Academic Senate Committee on:	
Conduct Governance	August 2011 - May 2012
Information Technology	August 2010 - May 2012
Committees	August 2010 - August 2011
Member of a Block Grant Review Area Committee	August 2010 - Dec 2010
Member of the Engineering Dean's Graduate Student Advisory Committee	January 2009 - May 2009
Member of the Graduate College Student Advisory Committee	August 2008 - May 2009
Member of the Residence Hall Judicial Commission	August 2006 - May 2008
Won 1st place at Google Games, Illinois	April 2008
Ran the Chicago Marathon	October 2007
Acted in On the Rocks (organized by the Krannert Center Student Association)	April 2007
Played squash for the University of Auckland Squash Club and captained a team	2003 - 2004

Research Interests

Software engineering with an emphasis on improving software reliability through software testing and analysis

Journal Articles (Peer Reviewed)

[1] M. Gligoric, V. Jagannath, Q. Luo, and D. Marinov, "Efficient Mutation Testing of Multithreaded Code," *Wiley Software Testing, Verification & Reliability*, vol. 23, no. 5, pp. 375–403, Aug. 2012, Invited submission.

Conference Papers (Peer Reviewed)

[2] V. Jagannath, M. Kirn, Y. Lin, and D. Marinov, "Evaluating Machine-Independent Metrics for State-Space Exploration," in *5th IEEE International Conference on Software Testing, Verification and Validation (ICST)*, Acceptance: 27%, 39/145, Montreal, Canada, Apr. 2012, pp. 320–329.

[3] E. Alves, M. Gligoric, V. Jagannath, and M. D'Amorim, "Fault-Localization Using Dynamic Slicing and Change Impact Analysis," in *26th IEEE/ACM International Conference on Automated Software Engineering (ASE)*, Short paper, Acceptance: 37%, Lawerence, Kansas, Nov. 2011, pp. 520–523.

[4] V. Jagannath, M. Gligoric, D. Jin, Q. Luo, G. Rosu, and D. Marinov, "Improved Multithreaded Unit Testing," in *13th European Software Engineering Conference and 19th ACM SIGSOFT Symposium on the Foundations of Software Engineering (ESEC/FSE)*, Acceptance: 17%, 34/203, Szeged, Hungary, Sep. 2011, pp. 223–233.

[5] V. Jagannath, Q. Luo, and D. Marinov, "Change-Aware Preemption Prioritization," in *20th International Symposium on Software Testing and Analysis (ISSTA)*, Acceptance: 29%, 35/121, Toronto, Canada, Jul. 2011, pp. 133–143.

[6] B. Daniel, D. Dig, T. Gvero, V. Jagannath, J. Jiaa, D. Mitchell, J. Nogiec, S. H. Tan, and D. Marinov, "ReAssert: A Tool for Repairing Broken Unit Tests," in *ACM/IEEE 33rd International Conference on Software Engineering (ICSE)*, Tool demo paper, Acceptance: 37%, 22/60, Honolulu, Hawaii, May 2011, pp. 1010–1012.

[7] M. Gligoric, T. Gvero, V. Jagannath, S. Khurshid, V. Kuncak, and D. Marinov, "Test Generation through Programming in UDITA," in *ACM/IEEE 32nd International Conference on Software Engineering (ICSE)*, Awarded the ACM SIGSOFT Distinguished Paper Award, Invited for submission to the ACM Transactions on Software Engineering and Methodology, Acceptance: 15%, 54/380, Cape Town, South Africa, May 2010, pp. 225–234.

[8] M. Gligoric, V. Jagannath, and D. Marinov, "MuTMuT: Efficient Exploration for Mutation Testing of Multithreaded Code," in *3rd International Conference on Software Testing, Verification and Validation (ICST)*, Invited for submission to Wiley Software Testing, Verification and Reliability, Acceptance: 27%, 41/154, Paris, France, Apr. 2010, pp. 55–64.

[9] B. Daniel, V. Jagannath, D. Dig, and D. Marinov, "ReAssert: Suggesting Repairs for Broken Unit Tests," in *24th IEEE/ACM International Conference on Automated Software Engineering (ASE)*, Acceptance: 18%, 38/222, Auckland, New Zealand, Nov. 2009, pp. 433–444.

[10] V. Jagannath, Y. Y. Lee, B. Daniel, and D. Marinov, "Reducing the Costs of Bounded-Exhaustive Testing," in *12th International Conference on Fundamental Approaches to Software Engineering (FASE)*, Acceptance: 25%, 30/124, York, United Kingdom, Mar. 2009, pp. 171–185.

Workshop Papers (Peer Reviewed)

[11] V. Jagannath, Z. Yin, and M. Budiu, "Monitoring and Debugging DryadLINQ Applications with Daphne," in *16th International Workshop on High-Level Parallel Programming Models and Supportive Environments (HIPS) co-located with the 25th IEEE International Parallel & Distributed Processing Symposium (IPDPS)*, Anchorage, Alaska, May 2011, pp. 1266–1273.

[12] V. Jagannath, M. Gligoric, D. Jin, G. Rosu, and D. Marinov, "IMUnit: Improved Multithreaded Unit Testing (Position Statement)," in *3rd International Workshop on Multicore Software Engineering (IWMSE) co-located with the ACM/IEEE 32nd International Conference on Software Engineering (ICSE)*, Cape Town, South Africa, May 2010, pp. 48–49.

[13] V. Jagannath, M. Gligoric, S. Lauterburg, D. Marinov, and G. Agha, "Mutation Operators for Actor Systems," in *5th International Workshop on Mutation Analysis (MUTATION) co-located with the 3rd International Conference on Software Testing, Verification and Validation (ICST)*, Paris, France, Apr. 2010, pp. 157–162.

[14] R. Sharma, M. Gligoric, V. Jagannath, and D. Marinov, "A Comparison of Constraint-based and Sequence-based Generation of Complex Input Data Structures," in *2nd Workshop on Constraints in Software Testing, Verification and Analysis (CSTVA) co-located with the 3rd International Conference on Software Testing, Verification and Validation (ICST)*, Paris, France, Apr. 2010, pp. 337–342.

Technical Reports

[15] M. Gligoric, T. Gvero, V. Jagannath, S. Khurshid, V. Kuncak, and D. Marinov, "On Test Generation through Programming in UDITA," Ecole Polytechnique Fédérale de Lausanne Technical Report, Tech. Rep., Sep. 2009.

[16] B. Daniel, V. Jagannath, D. Dig, and D. Marinov, "ReAssert: Suggesting Repairs for Broken Unit Tests," University of Illinois Technical Report, Tech. Rep., Aug. 2009.

Software

Research projects released publicly (open-source):

IMUnit: Improved unit testing of multithreaded code
Available at: http://mir.cs.illinois.edu/imunit

ReEx: Re-execution based exploration of multithreaded programs
Available at: http://mir.cs.illinois.edu/reex

UDITA: Test generation using declarative and imperative test abstractions
Available at: http://mir.cs.illinois.edu/udita

ReAssert: Automated repair of test assertions
Available at: http://mir.cs.illinois.edu/reassert

ASTGen: Test generation using imperative test abstractions
Available at: http://mir.cs.illinois.edu/astgen

Presentations

Visits:

IMUnit: Improved Multithreaded Unit Testing
At Columbia University, New York, NY in August 2011

IMUnit: Improved Multithreaded Unit Testing
At NEC Labs, Princeton, NJ in August 2011

IMUnit: Improved Multithreaded Unit Testing
At Microsoft Research, Mountain View, CA in August 2011

IMUnit: Improved Multithreaded Unit Testing
At Google, Mountain View, CA in August 2011

Conferences/Workshops:

SMutant: A Tool for Type-Sensitive Mutation Testing in a Dynamic Language (Tool Demo)
At ESEC/FSE, Szeged, Hungary in September 2011

IMUnit: Improved Multithreaded Unit Testing
At ESEC/FSE, Szeged, Hungary in September 2011

CoDeSe: Fast Deserialization via Code Generation
At ISSTA, Toronto, Canada in July 2011

CAPP: Change-Aware Preemption Prioritization
At ISSTA, Toronto, Canada in July 2011

MuTMuT: Efficient Exploration for Mutation Testing of Multithreaded Code
At ICST, Paris, France in April 2010

Mutation Operators for Actor Systems
At Mutation, Paris, France in April 2010

Reducing the Costs of Bounded-Exhaustive Testing
At FASE, York, UK in March 2009

Symposiums/Seminars:

IMUnit: Improved Multithreaded Unit Testing
At UPCRC Symposium, Intel Campus, Santa Clara, CA in August 2011

IMUnit: Improved Multithreaded Unit Testing
At UPCRC Illinois Summit, Refactoring Workshop, Urbana, IL in April 2011

IMUnit: Improved Multithreaded Unit Testing
At UPCRC Illinois Summit, Disciplined Parallel Programming Workshop, Urbana, IL in April 2011

IMUnit: Improved Multithreaded Unit Testing
At UPCRC Seminar, University of Illinois, Urbana, IL in April 2011

MuTMuT: Efficient Exploration for Mutation Testing of Multithreaded Code
At UPCRC Seminar, University of Illinois, Urbana, IL in February 2010

Lectures:

IMUnit: Improved Multithreaded Unit Testing
At CS 527: Advanced Topics in Software Engineering, University of Illinois, Urbana, IL in September 2011

Automated Testing of Refactoring Engines
At CS498DM: Software Testing, University of Illinois, Urbana, IL in April 2009

Research Service

Reviewer for IEEE Transactions on Software Engineering (TSE)

Secondary reviewer for ASE 2011, MBT 2010, ASE 2009, PLDI 2009, FSEN 2009, ICST 2009, ISSRE 2008, and ASE 2008

Student volunteer at OOPSLA 2009 and OOPSLA 2008

Teaching/Educational Service

University of Illinois:

Advanced Topics in Software Engineering (CS527) Fall 2011
Gave a guest lecture and mentored some group projects

Software Engineering Seminar (CS591se) Spring 2010
Co-organized the seminar

Software Testing (CS498dm) Springs 2008 & 2009
Lectured some of the classes, graded machine problems and monitored progress of group projects

Advanced Topics in Software Engineering (CS527) Fall 2008
Graded paper reviews and monitored progress of group projects

University of Auckland:

Operating Systems (SE370) 2004
Tutored labs and graded machine problems

Graphical User Interfaces and Database Management (SE350) 2004
Graded machine problems

Object Oriented Software Construction (SE251) 2003
Tutored labs and graded machine problems