

# CURRICULUM VITAE

ALMA L. JUAREZ DOMINGUEZ

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## CONTACT INFORMATION

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## EDUCATION

- 05/2005–present:     **University of Waterloo, Waterloo, Canada**  
PhD Candidate in Computer Science
- Expected graduation date: Fall 2009.
  - Supervisor: Dr. Nancy Day
- 09/2002–04/2005:     **University of Waterloo, Waterloo, Canada**  
MMath in Computer Science
- Thesis Title: “Verification of the DFC Call Protocol Correctness Criteria”
  - Supervisor: Dr. Nancy Day
- 09/1995–08/2000:     **Benemérita Universidad Autónoma de Puebla, México**  
B.Sc. in Computer Science

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## RESEARCH AND WORK EXPERIENCE

- 09/2006–04/2007:     **Research Associate** for Critical Systems Labs Inc. Worked on a project that involves a major automotive company, developing techniques for efficient detection of feature interaction for critical embedded systems.
- 05/2005–12/2006:     **Research Assistant** for Professor Nancy Day, University of Waterloo. Worked on developing techniques for the analysis of port-based distributed systems and feature interaction for automotive embedded systems.
- 08/2006:             **Participant** of the 27th International Summer School on “Software System Reliability and Security”, Marktoberdorf, Germany.
- 09/2003–04/2005:     **Research Assistant** with the CITO project “Managing Feature Interactions among Distributed Services”, sponsored by AT&T. Work on formal analysis techniques for distributed systems.
- 09/2001–08/2002:     **Analyst and Programmer** for the Colegio de Estudios Científicos y Tecnológicos del Puebla, Mexico. Upgraded systems for academic control; Set up networks; Developed and imparted courses; Technical support.
- 05/2000–12/2000:     **Research Assistant** for Professor Jose de Jesus Lavalle Martinez, BUAP. Investigated techniques to avoid redundancy problems for classical and non-classical logics using matrix characterization.

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**RESEARCH INTERESTS**

- Use of formal methods in the development of theories and formal analysis techniques for distributed and embedded systems using automated analysis and verification.
- Development of techniques and tools that will facilitate reusable independent feature development in automotive embedded systems, by detecting and analyzing feature interactions.
- Study and creation of compositional reasoning techniques for distributed systems, particularly ones that communicate asynchronously through first-in, first-out (FIFO) queues.

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**REFEREED PUBLICATIONS**

- 09/2008: A. L. Juarez Dominguez. *Feature Interaction Detection in the Automotive Domain*. In the Proceedings of the Doctoral Symposium of the 23rd IEEE/ACM International Conference on Automated Software Engineering (ASE). L'Aquila, Italy.
- 05/2008: A. L. Juarez Dominguez, N. A. Day, J. J. Joyce. *Modelling Feature Interactions in the Automotive Domain*. In the Proceedings of the 2008 International Workshop on Modeling in Software Engineering (MiSE). Leipzig, Germany.
- 06/2005: A. L. Juarez Dominguez, N. A. Day. *Compositional Reasoning for Port-based Distributed Systems*. In the Proceedings of the 20th IEEE/ACM International Conference on Automated Software Engineering (ASE) 2005. (short paper), Long Beach, California. (acceptance rate: 22%)
- 04/2005: A. L. Juarez Dominguez, *Verification of the DFC Port Protocol Correctness Criteria*, Master's Thesis, University of Waterloo, Waterloo, ON, Canada.

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**NON-REFEREED PUBLICATIONS**

- 08/2008: A. L. Juarez Dominguez, N. A. Day, and R. T. Fanson. *Translating Models of Automotive Features In MATLAB's Stateflow to SMV to Detect Feature Interactions*. In Proceedings of the 26th International System Safety Conference (ISSC 2008), Vancouver, BC, Canada.
- 12/2007: A. L. Juarez Dominguez, N. A. Day, and R. Fanson. *A Preliminary Report on Tool Support and Methodology for Feature Interaction Detection*, University of Waterloo. Technical Report CS-2007-44. Waterloo, ON, Canada.
- 08/2007: A. L. Juarez Dominguez, J. J. Joyce, and R. Debouk. *Feature Interaction as a Source of Risk in Complex Software-intensive Systems*. In Proceedings of the 25th International System Safety Conference (ISSC 2007), Baltimore, USA.
- 04/2004: A. L. Juarez Dominguez, W. Godard, and N. A. Day. *Model Checking the Distributed Feature Composition Architecture (DFC) in Spin*, University of Waterloo. Technical Report CS-2004-40. Waterloo, ON, Canada.

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**INVITED AND CONTRIBUTED TALKS**

- 10/2008: *mdl2smv: A Tool for Translating Automotive Feature Models in Matlab's Stateflow to SMV*, presented at the University of Waterloo. Waterloo, Canada.
- 09/2008: *Feature Interaction Detection in the Automotive Domain*, presented at the Doctoral Symposium as part of ASE 2008. L'Aquila, Italy.

- 08/2008: *Feature Interaction as a Source of Risk in Complex Software-Intensive Systems*, presented for the group developing a proposed ISO standard 26262 for Functional Safety of Electronic Control Systems in Road Vehicles. Vancouver, Canada.
- 08/2008: *Translating Models of Automotive Features In MATLAB's Stateflow to SMV to Detect Feature Interactions*, presented at the 26<sup>th</sup> ISSC. Vancouver, Canada.
- 05/2008: *Modelling Feature Interactions in the Automotive Domain*, presented at the MiSE 2008 Workshop. Leipzig, Germany.
- 04/2008: *Modelling Feature Interactions in the Automotive Domain*, presented at the University of Waterloo. Waterloo, Canada.
- 02/2008: *Tool Support and Methodology for Feature Interaction Detection*, presented at General Motors Research and Development. Warren, USA.
- 08/2007: *A Compositional Reasoning Method for the Verification of Port-based Distributed Systems*, presented at the University of British Columbia. Vancouver, Canada.
- 08/2007: *Feature Interaction as a Source of Risk in Complex Software-intensive Systems*, presented at the 25<sup>th</sup> ISSC. Baltimore, USA.
- 06/2008: *Detection and Resolution of Feature Interactions for Embedded Systems*, presented at the University of Waterloo. Waterloo, Canada.
- 01/2007: *Tool Assisted Feature Interaction Detection for Automotive Features*, presented at General Motors Research and Development. Warren, USA.
- 05/2005: *Verification of the DFC Port Protocol Correctness Criteria*, presented at the University of Waterloo. Waterloo, Canada.
- 04/2005: *Verification of the DFC Port Protocol Correctness Criteria*, presented at the University of Waterloo. Waterloo, Canada.

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#### TEACHING EXPERIENCE

- 05/2007–12/2007: **Co-supervisor** for Richard Fanson, University of Waterloo. Guided on a project about the identification of feature interactions in automotive embedded systems and in the acquisition of knowledge of computational tools, and problem solving skills.
- 03/2006: **Invited Lecturer** for ECE-725/CS-745 (Computer Aided Verification), University of Waterloo. Lecture on advanced topic: “Compositional Reasoning Methods”; Created lecture notes; Explained detailed material; Introduced multiple examples.
- 05/2006–08/2006: **Teaching Assistant** for CS246 (Software Abstraction and Specification), University of Waterloo. Revised course material; Marked assignments and exams.
- 01/2006–04/2006: **Teaching Assistant** for CS245 (Logic and Computation), University of Waterloo. Revised course material; Marked assignments and exams.
- 09/2005–12/2005: **Teaching Assistant** for CS445/ECE451 (Software Requirements and Specification), University of Waterloo. Guide and revise group projects (acting as a TA and as a customer); Lead walkthroughs for projects; Revised and corrected material; Marked exams and group projects.
- 05/2005–08/2005: **Teaching Assistant** for CS251 (Digital Design), University of Waterloo. Presented tutorials; Revised material; Marked assignments and exams.
- 12/2004: **Invited Lecturer** for CS-745 (Computer Aided Verification), University of Waterloo. Lecture on advanced topic: “Protocol Correctness Criteria”; Created lecture notes; Explained concepts and examples.
- 05/2004–08/2004: **Co-supervisor** for Wenceslas Godard, University of Waterloo. Guided on a project

09/2003–12/2003: about the identification of feature interactions in automotive embedded systems and in the acquisition of knowledge of computational tools, and problem solving skills. **Teaching Assistant** for CS245 (Logic and Computation), University of Waterloo. Revised course material; Marked assignments and exams; Lead tutorials.

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#### SERVICE

05/2009 : **Instructor** for the course “Introduction to Programming” for the CEMC Seminar in Computer Science for Young Women, University of Waterloo. Explain basic concepts of programming to high school school female students from across Canada.

12/2008 : **Panelist** for Women in Computer Science, University of Waterloo. Participated in the “Supervising Graduate Students” Information Session. Gave opinions and suggestions about styles of supervision, supervisor-student relationship, and handling problems with supervisor.

01/2008 : **Panelist** for Women in Math, University of Waterloo. Participated in the “Grad School Diaries” Session. Gave a talk about graduate research, life and opportunities for female undergraduate students in the Math department.

01/2007 – 04/2007: **Mentor** in the Women in Math program, University of Waterloo. Guided and encouraged first-year female undergrad students in different Mathematics disciplines.

04/2007 and 04/2005: **Student volunteer** at the 5th and 7th Annual Graduate Student Research Conference, University of Waterloo.

09/2006: **Student volunteer** at the 14th IEEE International Requirements Engineering Conference, Minneapolis, USA.

03/2005 : **Panelist** in the Women in Math Day, University of Waterloo. Lead one of the “Grad student research panel” Session. Gave a talk about graduate research and life for high school female students interested to pursue a career in Math.

06/2004 and 05/2004: **Instructor** for the session “Parallel Computing: Sorting” in the Imperial Oil Seminars in Computer Science for Young Women, University of Waterloo. Created material and guided junior high school students from all over Canada on activities to understand sequential and parallel sorting algorithms.

06/2003 and 05/2003: **Volunteer** for the course “Introduction to Programming” for the Imperial Oil Seminar in Computer Science for Young Women, University of Waterloo. Assisted during the sessions, explaining basic concepts of programming.

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#### SCHOLARSHIPS AND AWARDS

08/2008: **Scientific Research and Development of the Year Award**  
The International System Safety Society selected the Waterloo/GM (University of Waterloo and General Motors) Team as the recipient of the award in 2008 for the work of identification and description of “feature interactions” as a significant source of safety risk in complex software-intensive systems.

10/2008–09/2009: **Google Canada Anita Borg Memorial Scholarship Finalist**  
\$1,000CAD  
Google selected me as a finalist in the Canada Anita Borg Memorial Scholarship, based on the strength of my academic background and demonstrated leadership. The scholarship hopes to encourage women to excel in computing and technology

- and become active role models and leaders. Finalists received \$1,000 CAD each, and all scholarship recipients and finalists attended a networking retreat in NY.
- 05/2007–04/2009: **Cheriton Scholarship**  
\$10,000CAD/year for two years  
The David R. Cheriton School of Computer Science at the University of Waterloo reserves these scholarships for the School's very top graduate students.
- 01/2007–12/2008: **NSERC Industrial Postgraduate Scholarship (IPS)**  
\$21,000CAD/year for two years  
The Natural Sciences and Engineering Research Council of Canada (NSERC) in collaboration with the co-sponsoring companies General Motors Canada and Critical Systems Labs granted me this scholarship to work on the analysis of feature interactions for automotive embedded systems.
- 05/2006–12/2007: **International Graduate Student Doctoral Award**  
\$8,400CAD/year  
The University of Waterloo, granted me this award to achieve my doctorate degree in Computer Science at the University of Waterloo, Ontario.
- 09/2002–08/2004: **'Formación de Científicos y Tecnólogos' Scholarship**  
\$28,925CAD/year for two years  
The Consejo Nacional de Ciencia y Tecnología (CONACYT) granted me this scholarship to obtain my Masters degree in Computer Science at the University of Waterloo.
- 09/1996–08/2000: **Excellent Student Award**  
The Benemérita Universidad Autónoma de Puebla (BUAP) gives this award to people with an overall average of at least 95%.

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#### ADDITIONAL INFORMATION

- Mexican citizen, Canadian permanent resident

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#### REFERENCES

These persons are familiar with my professional qualifications and my character:

##### **Dr. Nancy A. Day**

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##### **Dr. Jeff J. Joyce**

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