Curriculum Vitae
Ruben A. Gamboa

Business Address:
Dept. of Computer Science
University of Wyoming
Laramie, WY 82071
ruben@uwyo.edu

Home Address:
228 Highway 10
Jelm, WY 82063
(307) 399-3637

Degrees

Swinburne Technical University Swinburne, Australia   2013
  Master of Science (Astronomy)
  Swinburne Astronomy Online

The University of Texas Austin, TX   1999
  Ph.D. in Computer Science
  Thesis: *Mechanically Verifying Real-Valued Algorithms in ACL2*
  Advisor: Robert S. Boyer

Texas A&M University College Station, TX   1986
  M.C.S. in Computer Science, minor in Mathematics
  Thesis: *Lower Bounds on Approximation Algorithms*
  Advisor: Donald K. Friesen

Angelo State University San Angelo, TX   1984
  B.S. in Computer Science, minor in Mathematics
  Magna cum Laude

Experience

Academic Experience

Associate Professor   2007–Present
Assistant Professor   2002–2007
  University of Wyoming
  Taught and developed a wide range of upper-division and graduate courses in computer science, as
  well as special courses for UW's honors program. Supervised graduate and undergraduate theses.
  Served in many different committees, including search committees, the tenure and promotion
  committee, the ABET/CSAB certification committee, the graduate committee, and the academic
  planning committee.

Visiting Associate Professor   2010–2011
  University of Oklahoma
  During a sabbatical leave, worked with Dr. Rex Page in developing a textbook for and teaching
  an honors course in applications of logic to software and hardware systems.

Adjunct Professor   2001
  The University of Texas at Austin
  Taught the sophomore course Analysis of Programs, which introduces students to formal reasoning
  about programs and common data structures.

Lecturer   1987
  Texas A&M University
  Taught the senior course in Programming Languages.

Graduate Assistant, Non-Teaching 1986–1987
Texas A&M University
System Administrator for the Computer Science Department.

Graduate Assistant, Teaching 1984–1985
Texas A&M University
Taught various introductory programming courses.

Industrial Experience

Member, Technical Advisory Group 2010–2011
Morningstar, Inc.
Assess trends and new developments in technology to inform Morningstar's global technology strategy.

Consultant 2010–2011
HappyJack Software, Inc.
Collaborated on the design of a distributed system that stores patient data. Provided advise on the transition of existing web services and databases to a new architecture that takes advantage of cloud computing and NoSQL.

Sr. Technical Consultant 2009–2010
Logical Information Machines, Inc. (LIM)
Designed and implemented a new data warehouse to handle terabytes of financial and energy data and distribute updates to LIM customers. Designed the architecture of the next-generation time-series and metadata server, LIM's flagship product.

Member, Technical Advisory Board 2000–2010
Logical Information Machines, Inc. (LIM)
Provide continuing advise in the technical direction of LIM, including new technologies and new products that use LIM's existing technologies.

Training Consultant Summers, 2000–2009
InferData, Ltd.
Develop training materials and deliver courses in a wide range of topics, including J2EE, Ruby on Rails, PHP, Python, Ajax, Dojo, XML, SOA, Flex, mashups, and other Web 2.0 technologies.

V.P. of Engineering 2000–2001
Loop One, Inc.
Designed and implemented Loop One's web service offering, which was based on mod_perl, Java, HTML, JavaScript, and Oracle's PL/SQL.

Founder and Member, Board of Directors 1990–2000
Logical Information Machines, Inc. (LIM)
Founder, first employee, and member of the board of directors of LIM, a leading supplier of time-series databases, applications, and data for the financial and energy markets.

Senior Architect and Fellow 1990–2000
Logical Information Machines, Inc. (LIM)
Designed and developed LIM's time-series database server and execution engine, based on linear temporal logic. LIM's time-series database technology, ranked as the best in the world by the Gartner Group, was developed in C++, Java, Lisp, Perl, and Oracle.

Junior Member, Technical Staff 1988–1989
MCC, Deductive Computing Laboratory
Designed and implemented an in-memory database system for $\mathcal{SALAD}$, an implementation of the deductive database $\mathcal{LDL}$.

Courses Taught

Undergraduate Courses in Computer Science

Algorithms and Data Structures

Software Engineering

Database Systems I

Computer Graphics

Computer Networks

Compiler Construction

Senior Design (capstone course)

Software Design*

Game Programming*

Enterprise Programming*

Distributed Computing for Cryptography*

Graduate Courses in Computer Science

Automated Reasoning*

Automated Programming*

Grid Computing for Scientific Applications*

Database Systems II*

Introduction to ACL2*

Honors Courses

Understanding the Digital Society*

Silicon Artists: Machines Who Paint, Compose, Perform, and Write*

How Computers Work: Logic in Action*

What Computers Can Do*

Courses at the Science and Math Teaching Center

Visualization Basics: Introduction to Computational Thinking & Robotics. Team taught with Jacqueline Leonard and Paul Escoto.

Student Advising

Ph.D. Students

Nadezda Kuzmina. Graduated fall of 2009. Thesis: "Discovery of Likely Program Constraints via Static and Dynamic Analysis." Partially supported by NSF CNS-0613919.

Anthony Wallace. Graduated spring of 2011. Thesis: "A Secure Framework for Information Sharing and Structured Search of Distributed Research Resources."

---

*Course was completely designed and developed by instructor.

M.S. Students

Sanjeev Kumar Chittiarusu. He is implementing quantum algorithms in ACL2(r). Expected to graduate in the summer of 2041.

Mayura Worlikar. She is working on a BOINC-based framework to distribute Scheme programs over network computing resources and its application to computational number theory. Expected to graduate in the summer of 2014.

Yunqian Wang. She is developing web services to support the Quasarchive project, which provides professional astronomers with an advanced, interactive catalog of quasi-stellar objects. Expected to graduate in the fall of 2014.

Travis Bolinger. Graduated fall of 2011. Thesis: "Non-relational Astronomical Databases."

Andrey Nifatov. Graduated spring of 2007. Thesis: "Training of Neural Networks on a Grid Architecture."

Divya Sethi. Graduated fall of 2006. Thesis: "Using Data Access Objects to Achieve Database Independence."

Todd Bolinger. Graduated spring of 2006. Thesis: "Scientific Visualization of Galaxy Behavior using Grid Architecture."

Edouard Havugimana. Graduated fall of 2004. Thesis: "Analysis of Online Transaction Security."

Committee Member, Computer Science

Sagar Kanakadandi, M.S., 2013.

Nattaya Areejitkasem, M.S., 2013.

Yousef Asiri, M.S., 2013.

Carl Eastlund, Ph.D., Northeastern University, 2012.

Vedaprakash Subramanian, M.S., 2011.

Hao Quan, M.S., 2011.

Qichang Chen, Ph.D., 2011.

Peter Reid, M.S., University of Oklahoma, 2011.

Sunil Kothari, Ph.D., 2011.

Josef Pohl, Ph.D., 2010.

Lei Wu, M.S., 2009.

Jung Kim, Ph.D., 2008.

Craig Unrein, M.S., 2007.

Christoph Jechlitschek, M.S., 2004.

Ryan Roan, M.S.

Ashish Dhital, M.S.

Committee Member, Other Disciplines

Siguna Müller, Ph.D., Biomedical Sciences, 2014.

Cara Wiblemo, Ph.D., Mathematics, 2014.

Sudipta Mallik, Ph.D., Mathematics, 2014.

Stephen Garth, M.S., Mathematics, 2013.

Jessie Caye Runnoe, Ph.D., Astronomy, 2013.

James Ryan Robeson, M.S., Electrical and Computer Engineering, 2013.

Lijuan Li, M.S., Electrical and Computer Engineering, 2013.

Sabrina Lyn Cales, Ph.D., Astronomy, 2012.

Michael DiPompeo, Ph.D., Astronomy, 2012.

Joseph Miles, Ph.D., Electrical and Computer Engineering, 2012.

Goutham Kamath, M.S., Electrical and Computer Engineering, 2012.

Namratha Bagali, M.S., Electrical and Computer Engineering, 2012.

Cara Wiblemo, M.S., Mathematics, 2011.

Michael DiPompeo, M.S., Astronomy, 2010.

Michael Sollami, M.S., Mathematics, 2009.

Eric Hoversten, M.A., Philosophy, 2008.

Harish Muralidhara, Ph.D., Electrical and Computer Engineering.

Curtis Nelson, Ph.D., Mathematics.

Undergraduate Senior Honors Projects

Spencer Buda. Seniors Honors Project. "Updating the UTEXAS2 Engineering Modeling Software." 2012.

Matt Williams and Tyler Clayton. Seniors Honors Project. "Falsity: A Multiplayer Game Engine." 2005.

Benjamin Ketron. Seniors Honors Project. "Tool to aid in learning phrase structure parsing trees." 2005.

Undergraduate Research

Odion Oisamoje. Using NoSQL to query astronomical databases. 2011.

Melissa Wiederrecht and Christopher MacLellan. Formal reasoning about programs in Scheme. 2008–2009.

Carla Elder, Drew Hauser, Karl Heimbuck, Maurisa Jensen, Kelley O'Toole, Heather Robinson. Cryptography Cohort, funded by NSF DMS-0639325. 2008–2009.

Tyler Branyan, Andrew Kreeger, Christopher MacLellan, Brian Moler, Daniel Peterson, Melissa Wiederrecht. Cryptography Cohort, funded by NSF DMS-0639325. 2007–2008.

Heather Aust and Yuki Kawabe. Comprehensibility of Design, funded by NSF CNS-0752944. 2007–2008.

U.S. Patents

No. 8,086,471 2011
Computer-Implemented System and Method for Electronic Medication Administration Records

No. 5,778,357 1998
Market Information Machine

No. 5,590,325 1996
System for Forming Queries to a Commodities Trading Database Using Analog Indicators

No. 5,414,838 1995
System for Extracting Historical Market Information with Condition and Attributed Windows

Honors

Dissertation nominated for the **ACM Dissertation Award** 2000
    University of Texas

Selected for the **MCD Fellowship** 1992
    University of Texas

Recipient of the **Forsythe Graduate Fellowship** 1985–1986
    Texas A&M University

Memberships

Upsilon Pi Epsilon Elected in 2010
    National Computer Science Honor Society

Phi Kappa Phi Elected in 1994
    National Honor Scholarship Society

Pi Mu Epsilon Elected in 1984
    National Mathematics Honor Society

Alpha Chi Elected in 1983
    National Computer Science Honor Society

ACM
    Association for Computing Machinery, and special interest groups SIGPLAN, SIGCSE, and SIGWEB

IEEE/CS
    IEEE Computer Science Society

Publications

Book Chapters

Gamboa, R. "ACL2." In *The Seventeen Provers of the World,* by F. Wiedijk. Springer, Lecture Notes in Artificial Intelligence (LNAI), 2006.

Gamboa, R. "Continuity and Differentiability in ACL2." In *Computer-Aided Reasoning: ACL2 Case Studies*, by M. Kaufmann, P. Manolios, and J Moore (Eds.) Kluwer Academic Press, 2000.

Chimenti, D. and R. Gamboa. "Inventory Control." In *A Logical Language for Data and Knowledge Bases*, by S. Naqvi and S. Tsur. Computer Science Press, 1989.

Chimenti, D. and R. Gamboa. "Resource Allocation and Deallocation." In *A Logical Language for Data and Knowledge Bases*, by S. Naqvi and S. Tsur. Computer Science Press, 1989.

Edited Proceedings

Gamboa, R. and J. Davis (Eds.) *Proceedings of the Eleventh International Workshop on the ACL2 Theorem Prover and its Applications*, Laramie, WY, 2013. Electronic Proceedings in Theoretical Computer Science (EPTCS), Vol. 114.

Gamboa, R., J. Cowles, and J. Sawada (Eds.) *Proceedings of the Seventh International Workshop on the ACL2 Theorem Prover and its Applications*, Austin, TX, 2007.

Papers in Refereed Journals

Gamboa, R. "A Formalization of Powerlist Algebra in ACL2." In *Journal of Automated Reasoning*, August, 2009.

Gamboa, R. and J. Cowles. "Theory Extension in ACL2(r)." In *Journal of Automated Reasoning*, May, 2007.

Gamboa, R. "The Correctness of the Fast Fourier Transform: A Structured Proof in ACL2." In *Formal Methods in System Design, Special Issue on UNITY*, January, 2002.

Gamboa, R. and M. Kaufmann. "Non-Standard Analysis in ACL2." In *Journal of Automated Reasoning,* November, 2001.

Chimenti, D., R. Gamboa et al. "The LDL System Prototype." In *IEEE Transactions on Data and Knowledge Engineering*, March, 1990.

Papers at Refereed Conferences

Helms, L. and R. Gamboa. "An Interpreter for Quantum Circuits." In *11th International Workshop on the ACL2 Theorem Prover and its Applications*, Laramie, WY, 2013. Archived at *Electronic Proceedings in Theoretical Computer Science (EPTCS)*.

Page, R. and R. Gamboa. "A More Formal Approach to 'Computer Science: Principles'." In *Proceedings of the 44th ACM Technical Symposium on Computer Science Education (SIGCSE),* Denver, CO, 2013.

Page, R. and R. Gamboa. "How Computers Work: Computational Thinking for Everyone." In *1st International Workshop on Trends in Functional Programming in Education (TFPIE),* St. Andrews, Scotland, 2012. Archived at *Electronic Proceedings in Theoretical Computer Science (EPTCS)*, Vol. 106.

Gamboa, R. and J. Cowles. "A Cantor Trio: Denumerability, the Reals, and the Real Algebraic Numbers." In *Proceedings of the 3rd International Conference on Interactive Theorem Proving (ITP)*, Princeton, NJ, 2012. Archived at *Lecture Notes in Computer Science (LNCS)*, Vol. 7406, Springer.

Cowles, J. and R. Gamboa. "Verifying Sierpiński and Riesel Numbers in ACL2." In *10th International Workshop on the ACL2 Theorem Prover and its Applications*, Austin, TX, 2011. Archived at *Electronic Proceedings in Theoretical Computer Science (EPTCS)*, Vol. 70.

Reid, P. and R. Gamboa. "Implementing an Automatic Differentiator in ACL2." In *10th International Workshop on the ACL2 Theorem Prover and its Applications*, Austin, TX, 2011. Archived at *Electronic Proceedings in Theoretical Computer Science (EPTCS)*, Vol. 70.

Reid, P. and R. Gamboa. "Automatic Differentiation in ACL2." In *Proceedings of the 2nd International Conference on Interactive Theorem Proving (ITP)*, Nijmegen, The Netherlands, 2011. Archived at *Lecture Notes in Computer Science (LNCS)*, Vol. 6898, Springer.

Cowles, J. and R. Gamboa. "Using a First Order Logic to Verify That Some Set of Reals Has No Lebesgue Measure." In *Proceedings of the 1st International Conference on Interactive Theorem Proving (ITP)*, Edinburgh, UK, 2010. Archived at *Lecture Notes in Computer Science (LNCS)*, Vol. 6172, Springer.

Cowles, J. and R. Gamboa. "Solving $\triangle = \square$." In *8th International Workshop on the ACL2 Theorem Prover and its Applications*, Boston, MA, 2009. Archived at the ACM Digital Library.

Gamboa, R. and J. Cowles. "Inverse Functions in ACL2(r)." In *8th International Workshop on the ACL2 Theorem Prover and its Applications*, Boston, MA, 2009. Archived at the ACM Digital Library.

Kuzmina, N., J. Paul, R. Gamboa, and J. Caldwell. "Extending Dynamic Constraint Detection with Disjunctive Constraints." In *6th International Workshop on Dynamic Analysis (WODA),* Seattle, WA, 2008. Archived at the ACM Digital Library.

Paul, J., N. Kuzmina, R. Gamboa, and J. Caldwell. "Toward a Formal Evaluation of Refactorings." In *Proceedings of the 6th NASA Langley Formal Methods Workshop (LFM),* Newport News, VA, 2008.

Kuzmina, N. and R. Gamboa. "Extending Dynamic Constraint Detection with Polymorphic Analysis." In *5th International Workshop on Dynamic Analysis (WODA),* Minneapolis, MN, 2007. Archived at the ACM Digital Library.

Cowles, J. and R. Gamboa. "Unique Factorization in ACL2: Euclidean Domains." In *6th International Workshop on the ACL2 Theorem Prover and its Applications*, Seattle, WA, 2006. Archived at the ACM Digital Library.

Gamboa, R. and J. Cowles. "Implementing a Cost-Aware Evaluator for ACL2 Expressions." In *6th International Workshop on the ACL2 Theorem Prover and its Applications*, Seattle, WA, 2006. Archived at the ACM Digital Library.

Gamboa, R. and J. Cowles. "A Mechanical Proof of the Cook-Levin Theorem." In *Proceedings of the 17th International Conference on Theorem Proving and Higher Order Logics (TPHOLs),* Park City, UT, 2004. Archived at *Lecture Notes in Computer Science (LNCS)*, Vol. 3223, Springer.

Yu, B., S.H. Kim, T. Bailey, and R. Gamboa. "Curve-Based Representation of Moving Object Trajectories." In *Proceedings of the International Database Engineering and Applications Symposium (IDEAS),* Coimbra, Portugal, 2004.

Gamboa, R., J. Cowles, and N. Kuzmina. "Axiomatic Events in ACL2(r): A Story of defun, defun-std, and encapsulate." In *5th International Workshop on the ACL2 Theorem Prover and its Applications*, Austin, TX, 2004.

Cowles, J. and R. Gamboa. "Contributions to the Theory of Tail Recursive Functions." In *5th International Workshop on the ACL2 Theorem Prover and its Applications*, Austin, TX, 2004.

Gamboa, R., J. Cowles, and J. Van Baalen. "On the Verification of Synthesized Kalman Filters." In *4th International Workshop on the ACL2 Theorem Prover and its Applications*, Boulder, CO, 2003.

Gamboa, R., J. Cowles, and J. Van Baalen. "Using ACL2 Arrrays to Formalize Matrix Algebra." In *4th International Workshop on the ACL2 Theorem Prover and its Applications*, Boulder, CO, 2003.

Gamboa, R. "Writing Literate Proofs with XML Tools." In *4th International Workshop on the ACL2 Theorem Prover and its Applications*, Boulder, CO, 2003.

Gamboa, R. and M. Patterson. "Polymorphism in ACL2." In *4th International Workshop on the ACL2 Theorem Prover and its Applications*, Boulder, CO, 2003.

Gamboa, R. and B. Middleton. "Taylor's Formula with Remainder." In *3rd International Workshop on the ACL2 Theorem Prover and its Applications*, Grenoble, France, 2002.

Sawada, J. and R. Gamboa. "Mechanical Verification of a Square Root Algorithm using Taylor's Theorem." In *Proceedings of the 4th International Conference on Formal Methods in Computer-Aided Design (FMCAD),* Portland, OR, 2002. Archived at *Lecture Notes in Computer Science (LNCS)*, Vol. 2517, Springer.

Gamboa, R. "Mechanically Verifying the Correctness of the Fast Fourier Transform in ACL2." In the Workshop on Parallel Programming, part of the *1st Merged Symposium of the International Parallel Processing Symposium and the Symposium on Parallel and Distributed Processing (IPPS/SPDP),* Orlando, FL, 1998. Archived at *Lecture Notes in Computer Science (LNCS)*, Vol. 1388, Springer.

Chimenti, D., R. Gamboa, and R. Krishnamurthy. "Abstract Machine for LDL." In *Proceedings of the 2nd Conference on Extending Database Technology (EDBT),* Venice, Italy, 1990. Archived at *Lecture Notes in Computer Science (LNCS)*, Vol. 416, Springer.

Chimenti, D., R. Gamboa, and R. Krishnamurthy. "Towards an Open Architecture for LDL." In *Proceedings of the 15th Conference on Very Large Databases (VLDB),* Amsterdam, The Netherlands, 1989.

Current Submissions

Gamboa, R. and J. Cowles. "Formal Verification of Medina's Sequence of Polynomials for Approximating Arctangent." Under review at the *12th International Workshop on the ACL2 Theorem Prover and its Applications*, Vienna, Austria.

J. Cowles and R. Gamboa. "Equivalence of the Traditional and Non-Standard Definitions of Concepts from Real Analysis." Under review at the *12th International Workshop on the ACL2 Theorem Prover and its Applications*, Vienna, Austria.

Gamboa, R. and J. Cowles. "On Vickrey's Theorem and the Use of ACL2 for Formal Reasoning in Economics (Extended Abstract)." Under review at the *12th International Workshop on the ACL2 Theorem Prover and its Applications*, Vienna, Austria.

Presentations and Other Publications

Kuzmina, N., T. Tashi, and R. Gamboa. "Distributed Architecture for Storing Non-Relational Data." Presented at the *International Conference on Information Technologies (ICIT)*, Saratov, Russia, 2012.

Gamboa, R. "ACL2(r): Got Reals?" Invited presentation at the *10th International Workshop on the ACL2 Theorem Prover and its Applications*, Austin, TX, 2011.

Gamboa, R. "Tales from the Front: How to Survive as a Software Entrepreneur." Invited presentation at the University of Oklahoma *Center for the Creation of Economic Wealth (CCEW) Speaker Series*, Norman, OK, 2010.

Mui, C., R. Gamboa, and J. Parkinson. "Disruptive Change." Panel discussion at the *Morningstar North American Tech Conference*, Chicago, IL, 2010.

Gamboa, R. "Recent Models for Distributed and Multicore Programming." Invited presentation at the *Morningstar North American Tech Conference*, Chicago, IL, 2010.

Wiederrecht, M., C. MacLellan, and R. Gamboa. "Reasoning About DrScheme Programs in ACL2." Presented at the *11th Symposium on Trends in Functional Programming (TFP)*, Norman, OK, 2010.

Gamboa, R. and J. Cowles. "A Mechanical Verification of Vitalis Theorem in an Unlikely Logic." Invited presentation at the University of Oklahoma, Norman, OK, 2010.

Gamboa, R. "An Entrepreneur's Education from the School of Hard Knocks." Keynote presentation at the *e2e Laramie* event, January, 2010. Also presented at the *StartWest* summer meeting, Sheridan, WY, 2010.

Gamboa, R. and J. Cowles. "The Chain Rule and Friends in ACL2(r)." Presented at the *8th International Workshop on the ACL2 Theorem Prover and its Applications*, Boston, MA, 2009.

Caldwell, J., J. Cowles, and R. Gamboa. "Enumerating Rationals Without Repetitions." Presented at the *8th International Workshop on the ACL2 Theorem Prover and its Applications*, Boston, MA, 2009.

Gamboa, R. "Computing in Astronomy." Presented at the *Launch Pad Workshop for Writers of Science Fiction*, Laramie, WY, 2008, 2009, and 2011 .

Gamboa, R. "Red-Black Trees for DrACuLa." Presented at the *7th International Workshop on the ACL2 Theorem Prover and its Applications*, Austin, TX, 2007.

Kuzmina, N. and R. Gamboa. "Dynamic Constraint Detection for Polymorphic Behavior." Poster presented at the *ACM SIGPLAN International Conference on Object-Oriented Programming, Systems, Languages, and Applications (OOPSLA)*, Portland, OR, 2006.

Yu, B. and R. Gamboa. "Designing Spatio-Temporal Portals to Continuously Changing Network Nodes." In *Encyclopedia of Portal Technology and Applications,* 2006.

Gamboa, R. "Mechanical Verification of Elementary Calculus Theorems in ACL2." Presented at University of Northern Colorado, Greeley, CO, 2006.

Gamboa, R., M. Gamboa, and J. Van Baalen. "Building Truly Database-Independent Applications." Presented at Software Development Conference & Expo, San Jose, CA, 2005.

Gamboa, R. "Proving Elementary Calculus Theorems in ACL2." Presented at Texas A&M University, College Station, TX, 1999.

Technical Reports

Gamboa, R. "Defthms About Zip and Tie: Reasoning About Powerlists in ACL2." University of Texas Computer Sciences Technical Report TR97-02, 1997.

Gamboa, R. "Square Roots in ACL2: A Study in Sonata Form." University of Texas Computer Sciences Technical Report TR96-34, 1996.

Chimenti, D., R. Gamboa, and R. Krishnamurthy. "Using Modules and Externals in LDL." MCC Technical Report ACA-ST-036-89, 1989.

Chimenti, D. and R. Gamboa. "The SALAD Cookbook: A User's/Programmer's Guide." MCC Technical Report ACA-ST-346-89, 1989.

Editorial Work

Co-chair, 5th International Conference on Interactive Theorem Proving (ITP), in Federated Logic Conference (FLoC), part of the Vienna Summer of Logic, 2014.

PC member, 9th International Workshop on Developments in Computational Models (DCM), 2013.

Co-chair, 11th International Workshop on the ACL2 Theorem Prover and its Applications. 2013.

PC member, International Conference on Automated Deduction (CADE), 2013.

PC member, International Conference on Interactive Theorem Proving (ITP), 2010, 2013.

PC member, Conferences on Intelligent Computer Mathematics (CICM), Calculemus Track, 2012.

PC member, 11th Symposium on Trends in Functional Programming (TFP), 2010.

NSF Review Panelist, Directorate of Education and Human Resources (EHR), multiple years.

Publications chair and PC member, 8th International Workshop on the ACL2 Theorem Prover and its Applications, 2009.

Reviewer, Free Competition, sponsored by the Netherlands Organisation for Scientific Research (NWO).

Member, ACL2 Steering Committee, 2006–2010.

NSF Review Panelist, Directorate of Computer and Information Science and Engineering (CISE), multiple years.

Co-chair, 7th International Workshop on the ACL2 Theorem Prover and its Applications, in Formal Methods in Computer-Aided Design (FMCAD) 2007.

Publications chair and PC member, 6th International Workshop on the ACL2 Theorem Prover and its Applications, in International Joint Conference on Automated Reasoning (IJCAR) 2006.

PC member, 5th International Workshop on the ACL2 Theorem Prover and its Applications, in Formal Methods in Computer-Aided Design (FMCAD) 2004.

PC member, 5th International Workshop on Strategies in Automated Deduction, in International Joint Conference on Automated Reasoning (IJCAR) 2004.

PC member, 3rd International Workshop on the ACL2 Theorem Prover and its Applications, in European Joint Conferences on Theory and Practice of Software (ETAPS) 2002.

PC member, 4th International Workshop on Strategies in Automated Deduction, in International Joint Conference on Automated Reasoning (IJCAR) 2001.

Reviewer, Journal of Automated Reasoning (JAR).

Reviewer, Journal of Automated Reasoning Special Issue on Empirically Successful Automated Reasoning (ESAR-JAR).

Reviewer, IEEE Transactions on Computer-Aided Design (TCAD).

Reviewer, Annals of Mathematics and Artificial Intelligence (AMAI).

Reviewer, Science of Computer Programming (SCP).

Reviewer, Electronic Notes in Theoretical Computer Science (ENTCS).

Reviewer, Journal of Systems and Software (JSS).

Reviewer, Journal of Software and Systems Modeling (SoSyM).

Reviewer, The Computer Journal (COMPJ).

Reviewer, Annual Meeting of the Society for Exact Philosophy (SEP).

Grants

Grants Awarded

Leonard, J., A. Buss, R. Gamboa, J. Hamaan, and F. Jafari. "Visualization Basics: Using Gaming to Improve Computational Thinking," NSF DRL-1311810, 10/01/13-9/20/16. $1,1999,963.

Gamboa, M. and R. Gamboa, and J. Van Baalen. "Electronic Medical Administration Record and Reminder System for Mobile Phones," Wyoming SBIR/STTR Initiative (WSSI), 10/1/09–12/1/09, $4,000.

Gamboa, R. and J. Caldwell. "REU Supplement for NSF CNS-0613919," NSF CNS-0752944. $12,000.

Müller, S. and R. Gamboa. "CSUMS: A Pilot Program to Train Cryptography Students in Computation," NSF DMS-0639325, 9/13/06–8/31/08, $196,000.

Gamboa, R. and J. Caldwell. "SoD-HCER: Comprehensibility as a Design Criterion," NSF CNS-0613919, 9/1/06–8/31/08 (extended to 8/31/09), $157,428.

Van Baalen, J. and R. Gamboa. "Video Analysis and Content Exploitation (VACE)," Disruptive Technology Office (DTO), 1/15/07–8/31/10, $576,000. Terminated 9/1/07 when the DTO decided to make all VACE-related work classified.

Gamboa, R. "Course Development: Grid Computing for Scientific Applications." Wyoming Space Grant Consortium, 6/1/05–8/31/05, $5,000.

Gamboa, R. "Logical Information Machines Next-Generation Time Series." LIM8277, 9/1/03–5/31/06, $102,957.

Gamboa, R. MIM software and SUN server, primarily intended for use by the College of Business. 9/1/03–5/31/05, $65,000.

Cowles, J., R. Gamboa, and J. Van Baalen. "Mechanical Verification of Synthesized Code." NASA NAG 2-1570, 7/15/02–10/14/03, $26,387.

Caldwell, J., R. Gamboa, and J. Van Baalen. "MRI: Acquisition of a Network of Workstations Serving as a Platform for Distributed Automated Reasoning." NSF EIA-0216592, 7/1/02–6/30/05, $82,530.

Caldwell, J., R. Gamboa, and J. Van Baalen. "Acquisition of a Network of Workstations Serving as a Platform for Distributed Theorem Proving," partial cost-sharing for EIA-0216592. University of Wyoming, MAJOREQUIP8327, 7/1/02–6/30/05, $25,000.

Proposals Under Consideration

Leonard, J., S. Aryana, M. Chamberlin, S. Chamberlin, M. Clementz, and K. Wells. "Collaborative Research: Wyoming Interns to Teacher Scholars (WITS) Program," submitted to NSF Noyce Program, 10/1/14–9/30/19, $909,574. R. Gamboa listed under "Key Personnel."

Ipiña, L., R. Gamboa, and D. Stanescu. "CS 10K: Beauty and Joy, Adapted and Adopted: Building a Computational Teaching Cadre from within Wyoming Schools," submitted to NSF CE21 Program, 1/15/15–1/14/18, $587,947.

Proposals Declined

Brotherton, M. "The Quasarchive," submitted to the NSF Division of Astronomical Sciences, 2013. R. Gamboa listed under "Key Personnel."

Brotherton, M. "The Quasarchive," submitted to NASA, 2012. R. Gamboa listed under "Key Personnel."

Paul, J., R. Gamboa, and J. Van Baalen. "Building a Verified Communication Stack for Medical Devices," submitted to the NIST (SBIR), 2009.

Felleisen, M., R. Page, and R. Gamboa. "CCLI-Phase 2: Collaborative Research: Theorem Proving for Practical Programmers," submitted to the NSF, 2009.

Müller, S. and R. Gamboa. "TF: Advances in Deterministic Primality Testing," submitted to the NSF, 2006.

R. Gamboa and J. Hamann. "ITEST: Using Astronomy to Engage Student Learning of Information Technology," submitted to the NSF, 2005.

J. Van Baalen and R. Gamboa. "A Vulnerability Analysis Tool for Web Applications," submitted to the NSF, 2005.

B. Yu and R. Gamboa. "DDDAS-SMRP: The Development of a Spatiotemporal Grid," submitted to the NSF, 2005.

J. Van Baalen and R. Gamboa. "A Vulnerability Analysis Tool for Web Applications," submitted to Cyber Security Research and Development (CSRD), 2004.

R. Gamboa. "Dynamic Detection of Program Constraints in Eclipse," submitted to the IBM Faculty Awards program, 2004.

R. Gamboa. "CAREER: A Framework for Reasoning about Object-Oriented Programs", submitted to the NSF, 2004.

J. Caldwell and R. Gamboa. "Incorporating Formal Aspects of Design into the Computer Science Curriculum", submitted to the NSF, 2004.

B. Yu, T. Bailey, and R. Gamboa. "A Database Server for Moving Object Trajectories," submitted to the NSF, 2004.

R. Gamboa. "Enhancing an Automated Theorem Prover to Support Analytic Number Theory," submitted as a Young Investigator's Grant to the NSA, 2003.

B. Yu, T. Bailey, R. Gamboa, and S.H. Kim. "How to Deal With Large Sets of Data Objects that Move with Momentum," submitted to the ARL, 2003.

R. Gamboa, J. Van Baalen, J. Cowles, and J. Whittle. "Verification of Automated Software," submitted to NASA, 2003.

B. Yu, T. Bailey, R. Gamboa, and S.H. Kim. "A Database Server for Moving Object Trajectories," submitted to the NSF, 2002.

R. Gamboa. "CAREER: Building Highly Reliable Object-Oriented Software," submitted to the NSF, 2002.

Service

University Committees

University Faculty Development Committee, 2014–present.

College of Engineering and Applied Science Academic Dishonesty Appeals Committee, 2013–present.

College of Engineering and Applied Science Academic Planning Committee, 2013–present.

Computer Science Undergraduate Committee, 2013–present.

Computer Science Graduate Examination Committee, 2012–present.

Computer Science Graduate Curriculum Committee, 2009, 2012–present.

University Academic Planning Committee, 2008–present.

Computer Science Graduate Committee, 2008–2009.

Computer Science Accreditation Committee, 2008–2010, 2014–present.

Computer Science APL Search Committee, 2008.

College of Engineering and Applied Science Tenure and Promotion Committee, 2007–2010, 2012.

Mathematics Faculty Search Committee, 2003–2005.

Computer Science Faculty Search Committee, 2002–2004, 2009.

Computer Science Equipment Committee, 2003–2004.

Miscellaneous

Volunteer teacher and founder of the Laramie Robotics Club, 2013–present.

Member of the Board of Directors of Innerphase, a regional, non-profit organization devoted to helping youth develop into leaders through athletics, 2013.

Volunteer teacher for Bootstrap learn-to-program after-school activity at Spring Creek Elementary, 2012.

Developed and delivered a programming course for UW's High School Summer Institute (HSI), 2011–2014.

Wyoming FIRST Lego League (FLL) competition coach, 2011, 2012.

Wyoming FIRST Lego League (FLL) competition judge, 2008.

Wyoming state science fair judge, 2008–2009.

Science fair judge at Laramie elementary and middle schools, 2005–2007.

Affiliate faculty of the Science and Mathematics Teaching Council (SMTC) at UW, 2008–present.

Participated in an ad hoc committee exploring a cross-disciplinary minor in computational science at UW, 2007. The resulting undergraduate minor was adopted by UW, starting in the fall of 2009.

Developed a web application designed to simplify the process of applying for faculty jobs and managing the internal search, 2006–2007. This became the commercial application www.EZFacultySearch.com.

Participated in outreach programs related to computers and astronomy at Wyoming K-12 schools, 2006.

Volunteer instructor of a course on computers and astronomy for 4th and 5th graders, 2005–2006.

Developed a LaTeX stylesheet for writing letters using the department stationery, 2004.

Developed a graphical gradebook application for the department and others in the university, 2003.

Personal Information

Born October 15, 1967, in Colombia, South America. Have lived in South America, Europe, and the United States. U.S. Citizen. Married, with two kids (16 and 12).

Amateur astronomer, science fiction fan, space enthusiast, private pilot.

April, 2014