James Caldwell
Department of Computer Science
University of Wyoming
Laramie, WY 82071-3313
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DATE: August 22, 2020

CURRENT POSITION: Professor, Department of Computer Science

UW ADDRESS:

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Dept of Computer Science
College of Engineering and Applied Science
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EDUCATION:

Degree	Year	University
PhD	1998	Cornell University
MS	1988	State University of New York at Albany
BS	1984	State University of New York at Albany

EMPLOYMENT:

Position	Organization	Dates
Co-Director	IOHK	Wyoming Advanced Blockchain R&D Lab (WABL)	2019 -present
Professor	Department of Computer Science, University of Wyoming.	2015 - present
Department Head	Department of Computer Science, University of Wyoming.	2012 - 2019
Associate Professor	Department of Computer Science, University of Wyoming.	2004 - 2015
Professor (Visiting)	School of Computer Science, University of St Andrews, UK	2008
Assistant Professor	Department of Computer Science, University of Wyoming	1998-2004
Research Assistant	Department of Computer Science,Cornell University	1997-1998
Computer Scientist	NASA Langley Research Center, Hampton, VA.	1988-1997
Software Engineer	Infologic at GE Corporate Research and Development Schenectady, N.Y.	1985-1988
Software Engineer	Phoenix Data Systems, Albany, N.Y.	1983-1985
Systems Programmer	CMT Trade Center, N.Y., N.Y.	1980-1981
CAD Programmer	NPS Automation Services Inc., Secacus, N.J.	1979-1980

HONORS AND AWARDS:
NSF Career Award (2000-2004)
NASA Graduate Studies Award (1990 - 1993)

CURRENT UW JOB DESCRIPTION:

<u>35</u>% Teaching <u>45</u>% Research <u>5</u> %Service <u>5</u>% Admin <u>10</u>% Professional Development

1 TEACHING

1.1 Courses Taught

(Last five years)

Year	Semester	Course	Cr. Hrs.	Enrollment
2020	Fall	(COSC 3015) Functional Programming	3	64
2020	Spring	(COSC 4780) Principles of Programming Languages	3	15
2019	Fall	(COSC 3015) Functional Programming	3	41
2019	Spring	(COSC 4780) Principles of Programming Languages	3	12
2018	Fall	(COSC 3015) Functional Programming	3	38
2018	Spring	(COSC 4780) Principles of Programming Languages	3	31
2017	Fall	(COSC 3015) Functional Programming	3	36
2017	Spring	(COSC 4780) Principles of Programming Languages	3	34
2016	Fall	(COSC 3015) Functional Programming	3	32

1.2 Sabbaticals

Year	Semester	Comments
2008	Spring	Dept. of Computer Science, St Andrews University, St Andrews, UK

2 SERVICE

2.1 Service to Wyoming

2018,2019 Presentation to the Wyoming Blockchain Task Force meeting on the proposal *Building a Sustainable, Interdisciplinary, Blockchain Education and Research Program at the University of Wyoming*, Oct, 29,2018.

2018 Panelist: *The way we'll work: Blockchain*, Laramie County Public Library, Cheyenne, WY, Oct. 4, 2018.

2018 Testified at the *Wyoming Blcockchain Task Force* meeting, Jackson Wy, 24-25th, September, 2018.

2018 Panelist at Wyoming Infrastructure Authority, Laramie WY, April 2018.

2018 Invited Presentation to the Wyoming House of Representatives on Blockchain, (with Dick McGinitiy) March 15, 2018.

2018 Panelist at Wyoming Economic Development Association, Winter Conference and Leislative Luncheon, Cheyenne WY, Feb 12-13, 2018.

2016-2017 Member, University of Wyoming Committee to advise the State of Wyoming on ways to diversify the state economy (Committe lead to formation of ENDOW)

2014-2018 Member, Board of Governance, Wyoming Cyber Response and Infrastructure Support Team (CRISP).

2.2 Professional Service

2018 Organized the Summit on *The AI Disruption of Work - Educational Responses* (with Moshe Vardi from Rice.). The summit was hosted by the University of Wyoming in Jackson Hole, WY on June 15-16, 2018. Keynote speakers included: Joseph Aoun(President Northeastern),Farnam Jahanian (President, Carnegie Mellon University), and Jeffrey Selingo (Washington Post, NYT Bestselling Author on Higher Education).
  `http://www.uwyo.edu/cosc/department/summit/agenda.html`

2011 Reviewer, Formal Aspects of Computing, Springer

2008 Reviewer, International Journal of Computer Mathematics, Types for Proofs and Programs, Lecture Notes in Computer Science, Vol. 5497

2005 Panel Reviewer, National Science Foundation, CISE, Arlington Va.; International Joint Conference on Artificial Intelligence (IJCAI-2005); [] Program Committee, CL∀AS∃: Constructive Logic for Automated Software Engineering., ENTCS Vol 153, No. 1

2004 Panel Reviewer, National Science Foundation, CISE, Arlington Va.

2003 Program Committee, LOPSTR, International Symposium on Logic-based Program Synthesis and Transformation.

2002 Reviewer, Wyoming DEPSCOR; Program Committee MKM 2002, The Second International Workshop on Mathematical Knowledge Management; Program Committee, LOPSTR 2002, International Symposium on Logic-based Program Synthesis and Transformation.

2001 Reviewer, IEEE Transactions on Parallel and Distributed Systems; Panel Reviewer National Science Foundation, CISE, Arlington VA

2000 Reviewer, 15th *IEEE International Conference on Automated Software Engineering*.

1998 External Reviewer, FormalWARE Project Review, Department of Computer Science, University of British Columbia, Vancouver, Canada, 21 May 1998; Reviewer, Fourth International Conference on Principles and Practice of Constraint Programming, CP'98;

1997 Program Committee, Lfm97, The Fourth NASA LaRC Formal Methods Workshop, Hampton, VA.

1996 Reviewer, COMPASS-96, The 11th Annual Conference on Computer Assurance, Gaithersburg, MD.

1995 Panel Chair, *Researcher Perspectives on Formal Methods*, Third NASA LaRC Formal Methods Workshop, Hampton, VA; Reviewer, IFIP Working Conference on Dependable Computing for Critical Applications, DCCA-5.

1994 Reviewer, IFIP Working Conference on Dependable Computing for Critical Applications, DCCA-4.

1993 Reviewer, FTCS-19, The Nineteenth International Symposium on Fault Tolerant Computing, 1989.

1989 Session Chair, Workshop on Hardware Specification, Verification and Synthesis: Mathematical Aspects. Mathematical Sciences Institute, Cornell University, July 1989.

2.3   University Service

2020 *WyoHackathon* Executive Committee. Laramie, WY, Sept 24 -27 2020.

2019 *WyoHackathon* Executive Committee and Organizer. Laramie, WY, Sept 20 -22 2019. *We had over 400 attendees, coming from the state, the region, nationally, and from 20 countries. There were more than 20 corporate sponsors including all the biggest names inthe blockchain space.*

2019-2020 Ad-hoc Provost's Committee for Blockchain Education and Research at UW (Dean Wright, Dean Rasco, Dean Sprott, and Dr. Synakowski.) *Goal of the committee is to design a cross-campus program to educate studewnts in blockchain technolgies and applications.*

2018 *WyoHackathon*, Principle organizer at the University of Wyoming, Laramie Wyoming, September 7-9th, 2018.

2015-2017 Wyoming-NCAR Advisory Panel

2013 CEAS Dean Review Committee

1999 Ad Hoc Committee for MIS/E-commerce (Business/Arts and Sciences)

2.4   College Service

2019-2020 CEAS Academic Program Committee

2013-2015 Engineering Initiative Working Group

2005-2007,2009,2011 Engineering College Tenure and Promotion Committee

2009-2001 Graduate Studies and Research Committee

2005-2006 Graduate Studies and Research Committee [chair]
2002-2006 International Engineering Program (IEP) Committee
2001-2002 Library Committee

2.5   Department Service

2019 -   Chair, Undergraduate Committee
2019 - 2020 Graduate Committee
2012-2019 Head, Department of Computer Science
2017-2018 Faculty Search Committee
2016-2017 Faculty Search Committee
2015-2016 Faculty Search Committee
2009–2010) Faculty Search Committee [Chair]
2008–2009) Faculty Search Committee
2008–2012) ABET Accreditation Committee
2008-2012 Graduate Committee
2006–2007) Faculty Search Committee
2003–2006 Graduate Student Coordinator
2002–2003) Faculty Search Committee
2000–2002) Faculty Search Committee [Chair]
2000–2003 Department Webmaster
1999–2005 Library Committee
1998–2001 Graduate Applications Reader
1998–1999 Colloquium Committee
1998 Academic Planing Committee

3   STUDENT ADVISING/GRADUATE STUDENT SUPERVISION

3.1   Graduate Students Completed

Name	Degree	Year/Semester
Ryan Roan	M.S.	2014/May
Type Checking SQL		
Sunil Kothari	Ph.D.	2011/May
Type Inference and Unification: Formal and Informal Proofs In and Around Wand's Algorithm		
Josef Pohl	Ph.D.	2010/December
Programming with Evidence		
Christoph Jechlitschek	M.S. (Plan A)	2004/May
Sharing Mathematical Knowledge in a Distributed Environment – a P2P Approach.		
Vitali Khaikine	M.S. (Plan B)	2003/August
Projecting Formal Proofs into XML: Nuprl into HELM		
Scott K. Johnson	M.S. (Plan A)	2002/December
Program Extraction from Single and Multi-Succedent Intuitionistic Propositional Proofs		
Tjark Weber	M.S. (Plan A)	2002/August
Program Transformations in Nuprl		
Osamu Goto	M.S. (Plan B)	2001/August
Implementing Amtoft's Call-by-Name to Call-by-Value Transformation for Untyped Computational Terms		

3.2 Graduate Students Current

Name	Degree	Funding Source
Finley McIlwaine	PhD	IOHK|Wyoming Advanced Blockchain Lab
Kegan McIlwaine	PhD	IOHK|Wyoming Advanced Blockchain Lab
Sujan Dhakal	MS	IOHK|Wyoming Advanced Blockchain Lab

3.3   Graduate Committees as Member

Name	Degree	Year/Semester	Department/Institution
Qichang Chen	Ph.D..	2011/August	Computer Science
An Integrated Static and Dynamic Program Analysis Framework for Checking Concurrency-related Programming Errors			University of Wyoming
Joseph R. Mayes	M.S. (Plan A)	2011/August	Philosophy
Indeterminacy of Reference			University of Wyoming
Rory N. Jarrard	M.S. (Plan A)	2011/August	Computer Science
Detecting Concurrency Error in OpenMP Programs using Static Program Analysis			University of Wyoming

Name	Degree	Year/Semester	Department/Institution
Casey Thomas Hart	M.S.(Plan A)	2011/May	Philosophy
Truth and Abstracta			University of Wyoming
Nadya Kuzmina	Ph.D.	2009/Dec.	Computer Science
Discovery of Likely Program Constraints via Static and Dynamic Analysis			University of Wyoming
Quichang Chen	M.S. (Plan A)	2009/May	Computer Science
Detecting Atomicity Violations via Integrated Dynamic and Static Analysis			University of Wyoming
Binod Pokharel	M.S. (Plan A)	2008/Dec.	Atmospheric Sciences
The Removal of Ultra-fine Nucleui in Mountain Wave Clouds.			University of Wyoming
Ryan C. Harkins	M.S. (Plan A)	2006	Computer Science
Applications of Resource-Bounded Measure in Double-Exponential Time.			University of Wyoming
Jan-Eric Duden	M.S. (Plan A)	2002	Computer Science
An Improved Approach to Real-Time Beat-Induction from Digital Audio Signals			University of Wyoming
Thomas Böhne	M.S. (Plan A)	2002	Computer Science
A General Intruder for Security Protocols in Maude			University of Wyoming
Nija Shi	M.S. (Plan A)	2001	Computer Science
Techniques to Improve the Performance of CORBA Applications			University of Wyoming
Bruce Allen Peterson	M.S. (Plan A)	May 2001	Computer Science
Adaptive System Design based on Psychology Experiments and Multi-Agents			University of Wyoming
Scott Clark McDaniel	M.S. (Plan A)	May 2001	Computer Science
Authorized Access Only: Designing and Implementing Secure Networking and Authorized Remote Access to NASA's Countermeasures Evaluation and Validation Project Data			University of Wyoming
Tzulip Phang	M.S. (Plan A)	May 2001	Computer Science
The development of a dynamic algorithm to create restriction sites using all possible combinations of silent mutations on a DNA sequence			University of Wyoming
Sankaranar Srinivasan	M.S.(Plan A)	Dec. 2001	Computer and Electrical Engineering University of Wyoming
ISA: An Internet Security Agent			
John Paul	M.S. (Plan A)	2000/May	Computer Science
Two Verified Implementations of the Projective Group for a Coordination Model			University of Wyoming
Phil Anzel	M.S. (Plan A)	2000/Dec.	Computer Science
Translation of semi-Structured Text Documents			University of Wyoming

4 PUBLISHED & SUBMITTED WORKS

4.1 Books/Textbooks/Monographs/Chapters in Books

Ben L. Di Vito,Ricky W. Butler, and James L. Caldwell: High level design proof of a reliable computing platform. In *Dependable Computing for Critical Applications 2, Dependable Computing and Fault-Tolerant Systems*, pages 279–306. Springer Verlag, 1992.

4.2 Journal Articles

James Caldwell, Ian Gent, Peter Nightingale: Generalized support and formal development of constraint propagators, *AI Communications* Vol. 30, No. 5, pp. 325-346, 2017.

James Caldwell: Structural Induction for Functional Programmers *Proceedings of Second Workshop on Trends in Functional Programming in Education, (TFPIE 2013)*, May 13, 2013. Provo, Utah. Electronic Proceedings in Theoretical Computer Science (EPTCS). .

James Caldwell and Josef Pohl, Constructive membership predicates as index types, *Electronic Notes in Theoretical Computer Science*, Vol. 174, No. 7, pp. 3–16, June 2007.

James L. Caldwell, Ian Gent and Judith Underwood: Search Algorithms in Type Theory. *Theoretical Computer Science*, vol. 232, no. 1–2, pp. 55–90, February 2000.

James L. Caldwell: Formal Methods Technology-Transfer: a View from NASA. *Formal Methods in System Design.* vol. 12, no. 2, pp. 125–137, March 1998.

4.3 Proceedings/Transactions (ALL REFERRED)

James Caldwell and Ryan Roan. Type Checking SQL for Secure Database Access, 16 pp., *2012 Symposium on Trends in Functional Programming (TFP 2012)*, University of St Andrews, UK. 12-14 June 2012.

James Caldwell. Teaching Natural Deduction as a Subversive Activity. The Third International Congress on Tools for Teaching Logic, 1-4 June, 2011,Salamanca, Spain.

Sunil Kothari and James Caldwell. A Machine Check Model of Idempotent MGU Axioms for Lists of Equational Constraints.in Electronic Proceedings in Theoretical Computer Science, Vol. 42. The 24th International Workshop on Unification.,pp. 24 - 38, July 2010 Edinburgh, Scotland.

Sunil Kothari and James Caldwell. Toward a machine-certified correctness proof of Wand's type reconstruction algorithm. Extended abstract. 4th Informal ACM SIGPLAN Workshop on Mechanizing Metatheory (WMM'09), September 4, 2009, Edinburgh, Scotland.

Sunil Kothari and James Caldwell. A Machine Checked Model of MGU Axioms: Applications of Finite Maps and Functional Induction. In *The Proceedings of UNIF 2009, the 23rd International Workshop on Unification*, Edited by Chris Lynch and Paliath Narendran. pp. 17-31, July 2009, Montreal, Canada.

James Caldwell, John Cowles and Ruben Gamboa: Enumerating Rationals without Repetitions (Abstract) . *Eighth International Workshop On The ACL2 Theorem Prover and Its Applications*, May 11-12, 2009, `www.cs.utexas.edu/∼sandip/acl2-09/`. Boston, USA.

Roy Dyckhoff and James Caldwell: Proof Extraction from Multi-succedent Intuitionistic Derivations. Presented at the *Workshop on Recent Trends in Proof Theory*, July 2008, `http://wpt08.iam.unibe.ch/`, Bern Switzerland.

Nadya Kuzmina, John Paul, Ruben Gamboa and James Caldwell, Extending Dynamic Constraint Detection with Disjunctive Constraints, *Sixth International Workshop on Dynamic Analysis (WODA 2008)*. pp. 57-63, July 21 2008. Available in the ACM Digital Library. `http://portal.acm.org/`

Sunil Kothari and James Caldwell, On Extending Wand's Type Reconstruction Algorithm to Handle Polymorphic Let in *Logic and Theory of Algorithms, Fourth Conference on Computability in Europe, CiE 2008* , Edited by Arnold Beckmann, Costas Dimitracopoulos, and Benedikt Löwe. pp. 254-263. University of Athens, June 2008

John Paul, Nadya Kuzmina, Ruben Gamboa and James Caldwell: Toward a Formal Evaluation of Refactorings.in *Proceedings of the Sixth NASA Langley Formal Methods Workshop (LFM 2008)*, NASA/CP-2008-215309, pp. 33–35, May, 2008, Newport News, VA

Tjark Weber and James Caldwell: Constructively Characterizing Fold and Unfold. in *Logic Based Program Synthesis and Transformation.* Lecture Notes in Computer Science , Vol. 3018 Edited by M. Bruynooghe, Springer Verlag, 2004.

James Caldwell and Christoph Jechlitschek: A Framework for Interactive Sharing and Deductive Searching in Distributed Heterogeneous Collections of Formalized Mathematics.
in Emerging Trends, Proceedings of the 17th International Conference in Theorem Proving in Higher Order Logics: TPHOL 2004, Park City, Utah, USA September, 2004. Conrd Slind (ed.), School of Computing, University of Utah.

James L. Caldwell and John Cowles: Representing Nuprl Proof Objects in ACL2: toward a proof checker for Nuprl, in *Proceedings of the Third International Workshop on the ACL2 Theorem Prover and Its Applications (ACL2-2002)*, 8–9 April 2002, Grenoble France.

James L. Caldwell: Extracting Recursion Operators in Nuprl's Type Theory. In A. Pettorossi, editor, *Proceedings of LOPSTR 2001, the Eleventh International Workshop on Logic-based Program Synthesis and Transformation*, pp.124–131, Paphos, Cyprus, November 28–30, 2001. Lecture Notes in Computer Science, vol. 2372, Springer 2002.

Stuart Allen, James L. Caldwell, and Robert Constable: Logical Aspects of Digital Mathematics Libraries. In O. Caprotti and B. Buchberger, editors, *Proceedings of the First Workshop on Mathematical Knowledge Management*, RISC, A-4232 Schloss Hagenberg, Austria, 24–26, 2001.

Jeffrey Van Baalen, James L. Caldwell, Shivakant Mishra: Specifying and Checking Fault-tolerant Agent-based Protocols using Maude. In J.L. Rash, C.A. Rouff, W. Truszkowski, D. Gordon and M.G. Hinchey, editors, *Formal Approaches to Agent-Based Systems*, Lecture Notes in Artificial Intelligence, vol. 1871, pp. 180–193, Springer, 2001.

James L. Caldwell: Intuitionistic Taleau Extracted. In Neil V. Murray, editor, *Automated Reasoning with Analytic Tableaux and Related Methods*, Lecture Notes in Artificial Intelligence, vol. 1617, pp. 82–96, 1999, Springer.

James L. Caldwell: Classical Propositional Decidability via Nuprl Proof Extraction. In Jim Grundy and Malcolm Newey, editors, *TPHOLs'98: The 11th International Conference on Theorem Proving in Higher Order Logics*, Lecture Notes in Computer Science vol. 1479, pp. 105–122, 1998, Springer.

James L. Caldwell: Moving Proofs-as-Programs into Practice. In *Proceedings, ASE '97, 12th IEEE International Conference Automated Software Engineering*, pp. 10–17, 1997, IEEE Computer Society Press.

James L. Caldwell and Judith Underwood: Classical tools for constructive proof search. In Didier Galmiche, editor, *Proceedings of the CADE-13 Workshop on Proof search in type-theoretic languages*, pp. 31–40. Rutgers N.J., 30 July 1996.

James L. Caldwell: Formal Methods Technology-Transfer: a View from NASA. In S. Gnesi and D. Latella, editors, *Proceedings of the ERCIM Workshop on Formal Methods for Industrial Critical Systems*, pp. 1–16, Oxford England, March 1996.

Ricky W. Butler, James L. Caldwell, Victor Carreno, Michael Holloway, Paul Miner and Ben L. Di Vito: NASA Langley's Research and Technology Transfer Program in Formal Methods. In *Proceedings*

of the 10th Annual Conference on Computer Assurance (COMPASS 95), Gaithersburg, MD, June 1995.

Ricky W. Butler, James L. Caldwell, and Ben L. Di Vito: Design strategy for a formally verified reliable computing platform. In *6th Annual Conference on Computer Assurance (COMPASS 91)*, pp. 125–133, Gaithersburg, MD, June 1991, IEEE Press.

Ben L. Di Vito,Ricky W. Butler, and James L. Caldwell: High level design proof of a reliable computing platform. In *Proceedings 2nd IFIP Working Conference on Dependable Computing for Critical Applications*, pp. 124–136, Tucson, AZ, February, 1991.

Paul S. Miner and James L. Caldwell: A HOL theory for voting. In *NASA Formal Methods Workshop 1990*, pp. 442–456, NASA CP-10052, November 1990.

Dragomirecky, M; Caldwell, J; Hartman, M; Jasica, J.; Smith, W.D.; Duff, D. and d'Abreu, M. A.: Face core environment: The model and its application in CAE/CAD tool development. In *Proceedings of the 1989 26th ACM/IEEE Conference on Design Automation*, pp. 466–471, 1989, ACM Press.

4.4 Other

S. Kothari and J. Caldwell. *Wand's Algorithm extended for the Polymorphic ML-Let.* pp. 32, December, 2007. Technical Report, Department of Computer Science, University of Wyoming.
`http://www.cs.uwyo.edu/∼ skothari/typeinference/report.pdf`.

Qichang Chen, Liqiang Wang, Zijiang Yang, Scott D. Stoller, and James Caldwell. *HAVE: Integrated dynamic and static analysis for atomicity* . Technical report, Department of Computer Science, University of Wyoming, December 2007.

James Caldwell: *Logic and Discrete Mathematics for Computer Scientists*, Manuscript used in COSC 2300, pp.194 + xi, April 2010.
`http://www.cs.uwyo.edu/∼jlc/papers/`.

James Caldwell: *Graduate Handbook, Department of Computer Science* , pp. 19 + ii, September, 2005.
`http://www.cs.uwyo.edu/∼ jlc/graduate_program/Graduate_Handbook.pdf`.

Tjark Weber and James Caldwell: Quicksort via Bird's Tree Fusion Transformation.
Published online at the Formal Digital Libraries Project, May, 2003
`http://www.nuprl.org/Algorithms/?Algorithms=Algorithms`.

Robert L. Constable, Stuart Allen, Mark Bickford, James Caldwell, Jason Hickey, and Christoph Kreitz: *Steps Toward a World Wide Digital Library of Formal Algorithmic Knowledge* Volumes I and II, Materials presented to the DoD MURI program review, at the Office of Naval Research, grant N00014-01-1-0765, October 2003.

Charles Pecheur, James Caldwell, Reid Simmons, and Willem Visser: Verification and Validation of Autonomous and Adaptive Systems, Report from the RIACS Workshop, Feburary 2001. Available online at `http://ase.arc.nasa.gov/vv2000/asilomar-report.html`

Jeffery Van Baalen and James Caldwell: Computer Science Department, Five Year Plan, November 2000. Available online at `http://www.cs.uwyo.edu/five_year_plan.html`

James L. Caldwell: *Decidability Extracted: Synthesizing "Correct-by-Construction" Decision Procedures.* Cornell University Ph.D. Thesis, August, 1998. Available as Computer Science Tech. Report TR98-1722.

Ben L. Di Vito, Ricky W. Butler, and James L. Caldwell: *Formal design and verification of a reliable computing platform for real-time control (Phase 1 results)*. NASA Technical Memorandum 102716, October 1990.

James L. Caldwell, Ricky W. Butler, and Ben L. Di Vito: Hierarchical approach to specification and verification of fault-tolerant operating systems. In *DARPA/Army Workshop on Software Tools for Distributed Intelligent Control Systems*, Pacifica, CA., July 1990.

James L. Caldwell: *Matching Problems in a Generalized Hypergraph Model.* Submitted in partial requirement for M.S., Department of Computer Science, State University of New York at Albany, June 1988.

5 PRESENTED PAPERS/SYMPOSIA/INVITED LECTURES/ PROFESSIONAL MEETINGS/WORKSHOPS

James Caldwell, *Toward Extracting Monadic Programs from Proofs*, Galois Inc., Portland OR, 18 March 2016.

James Caldwell, *Extracting Programs from Multi-succedent Intuitionistic Derivations*, Wyoming Logic Society, Laramie, WY, 17 September 2008.

James Caldwell,*Logic in Computer Science, A personal view.*, Invited lecture to CS3202 Logic, Specification and Verification, University St Andrews, St. Andrews UK, 4 March 2008.

James Caldwell, *Research Themes in Proofs and Programs.*, Functional Programming Research Group, University St Andrews, St. Andrews UK, 8 Feburary 2008.

James Caldwell, *On a Framework for Interactive Sharing and Deductive Searching in Distributed Heterogeneous Collections of Formalized Mathematics.* TPHOL 2004, September 16, 2004, Park City Utah.

James Caldwell, *Remarks on the theory of flat data-spaces, abstract identifiers and structured texts.* MURI Grant Review, October 31 2003, Office of Naval Research, Arlington VA.

James Caldwell, *Architectures for distributed FDL's: A client/server basis for peer-to-peer interaction.* MURI Grant Review, October 31 2003, Office of Naval Research, Arlington VA.

James Caldwell, *Representing Nuprl Proof Objects in ACL2: toward a proof checker for Nuprl.* Third International Workshop on the ACL2 Theorem Prover and Its Applications (ACL2-2002), April 8, 2002, Grenoble, France.

James Caldwell, *Extracting Recursion Operators in Nuprl's Type Theory.* LOPSTR 2001, the Eleventh International Workshop on Logic-based Program Synthesis and Transformation, November 30, 2001, Paphos, Cyprus

James Caldwell, *Interactive Digital Libraries of Formalized Algorithmic Knowledge.* First International Workshop on Mathematical Knowledge Management, RISC, A-4232 Schloss Hagenberg, Linz Austria, 24 September, 2001

James Caldwell, *Programming with proofs, and proving programs.*, Department of Computer Science, Colorado State University, Fort Collins, Colorado, 20 April 2000.

James Caldwell,*Extracting call/cc from Nuprl Proofs.* Department of Computer Science, Indiana University, Bloomington, Indiana, 31 March 2000.

James Caldwell, *Programming with proofs, and proving programs.* Department of Computer Science, New Mexico State University, Las Cruces, New Mexico, 10 March 2000.

James Caldwell, *Applications of Constructive Proofs in Computer Science*, University of Wyoming Math Department Colloquium, Laramie, WY, 2 March 2000.

James Caldwell, *Proofs-as-Programs: from the Curry-Howard Isomorphism to Programming Practice.* An talk given to the University of Wyoming Logic Society, Laramie, WY, 6 December 1999.

James Caldwell, *Intuitionistic Tableau Extracted.* A talk given at TABLEAUX'99, Saratoga Springs, NY, 10 June 1999.

James Caldwell, *Classical Propositional Decidability via Nuprl Proof Extraction.* A talk given at TPHOLs'98, Canberra, Australia, 29 September 1998.

James Caldwell, *Formal Methods: Industrial Applications from the NASA Portfolio.* An invited talk given at Raytheon Systems Canada Ltd., Richmond, British Columbia, 22 May 1998.

James Caldwell, *Applications of Proofs-as-Programs in Practice.* An invited talk given at the University of Wyoming, Laramie, WY, 30 April 1998.

James Caldwell, *Extracting Readable and Efficient Programs from Nuprl Proofs.* Presented at the PRL seminar, Cornell University, Ithaca, NY, 18 Nov 1997.

James Caldwell, *Moving Proofs-as-Programs into Practice.* A presentation given at the 12th IEEE International Conference Automated Software Engineering (ASE'97), Incline Village, NV, 5 Nov 1997.

James Caldwell, *Classical tools for constructive proof search.* A presentation given at the Workshop on Proof search in type-theoretic languages held in conjunction with CADE-13, Rutgers N.J., 30 July 1996.

James Caldwell, *A Constructive account of Correct-by-construction.* A talk given at NASA Langley Research Center, Hampton, VA, 26 April 1996.

James Caldwell, *Decidability Extracted: Correct-by-construction Decision Procedures.* An invited talk given at Odyssey Research Associates, Ithaca, NY, 4 April, 1996.

James Caldwell, *Formal Methods Technology Transfer: A View From NASA.* An invited presentation given at the Laboratory for Foundations of Computer Science at University of Edinburgh, Scotland, 28 March 1996.

James Caldwell, *Formal Methods Technology Transfer: A View From NASA.* A presentation given at the ERCIM Workshop on Formal Methods for Industrial Critical Systems at Saint Hughes College, Oxford University, Oxford England, 19 March 1996.

James Caldwell, *Propositional Decidability Extracted; A Nuprl proof and extracted decision procedure.* An oral presentation given on the occasion of my A-exam, Cornell University, Ithaca, NY, 28 March 1995.

James Caldwell, *Industrial applications of formal methods, experiences from NASA.* Presented at the Nuprl Seminar, Cornell University, Ithaca, NY, 7 February 1995.

James Caldwell, *Type theory, λ-calculus, the Curry–Howard Isomorphism and all that.* A talk presented at the Formal Methods and Software Engineering Seminar, NASA Langley Research Center, Hampton, VA, 30 September 1994.

James Caldwell, *Formal verification of fault–tolerant systems for Hybrid Applications.* An invited presentation given at the Hybrid Systems Workshop, Mathematical Sciences Institute, Ithaca, NY, 10–12 June 1991.

James Caldwell, *Close Enough For Government Work: Reflections on Models of Faulty State Machines.* Presented at the First NASA Langley Formal Methods Workshop, Hampton, VA, August 1990.

James Caldwell, *Hierarchical Specification and Verification.* A talk presented at the Workshop on Software Tools for Distributed Intelligent Control, DARPA, Pacifica CA, 17 July 1990.

6 CONTRACTS & GRANTS

6.1 Funded Projects

Contract or Grant Title	Sponsor	Start and End Date	Budget	Percentage Credit
IOHK | Wyoming Advanced Blockchain R&D Lab	IOHK & State of Wyoming& UW	7/20 − 2/22	$1,300,000	50% With Mike Borowczak
Building a Sustainable, Interdisciplinary, Blockchain Education and Research Program at the University of Wyoming	Wyoming Legislature	7/19 − 6/21	$1,000,000	Author of proposal. Matching funds available toUW for Blockchain.
University of Wyoming / Microsoft Collaboration: Dry Creek Data Plant Demonstration Project.	Microsoft	8/13–7/15	$40,463	100% PI With Tim Kuhfus and Bryan Shader
Cheyenne Biogas Dataplant Cluster	Microsoft	6/14	$1,352,000	33% PI - Equipment With Tim Kuhfus and Bryan Shader
Proof theory and constraint satisfaction	UK Engineering & Physical Sciences Research Council EP/F031114/1	1/08-5/08	£ 44,237	60% Fellowship with Ian Gent and Roy Dyckhoff
Research Experiences for Undergraduates	NSF/ REU supplement to NSF 0613919	9/08-8/09	$12,240.	50% CO-PI with Ruben Gamboa
SoD-HCER: Comprehensibility as a Design Criteria.(Science of Design Program)	NSF 0613919	9/06–8/09	$157,428	50% Co-PI with Ruben Gamboa
Acquisition of a Network of Workstations Serving as a Platform for Distributed Automated Theorem Proving	NSF MRI-0216592	9/02-8/04	$82,530	33% PI with Ruben Gamboa and Jeffery Van Baalen
Acquisition of a Network of Workstations Serving as a Platform for Distributed Automated Theorem Proving	UW match for MRI-0216592	9/02-8/04	$35,000	33% PI with Ruben Gamboa and Jeffery Van Baalen
CAREER: A formal programming methodology with applications to developing automated verifiers.	NSF CCR-9985239	9/00-8/05	$213,195	100% PI
Building Interactive Digital Libraries of Formal Algorithmic Knowledge	ONR N00014-01-1-0765	9/01-8/04	$500,000 $152,596 WY	30% Co-PI Joint with Cornell and CalTech

Contract or Grant Title	Sponsor	Start and End Date	Budget	Percentage Credit
Class Projects in Formal Verification Methods	Rockwell Collins	9/01-8/02	$19,500	50% PI with John Cowles and Jeffrey Van Baalen
Formal Specification and Verification of Agent Based Computing Protocols.	Univ. Wyoming Faculty Grant in Aid	9/99 - 8/00	$5000	50% Co-PI with Shivakant Mishra