

Dr. Lutz Hamel

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Positions

2016-present Big Data/Machine Learning Consultant for positivity-zone.info, Germany
2016-present Advisory Board Member for theinnovationscout.com
2009-present Associate Professor in Computer Science and Statistics, University of Rhode Island
2017-present Director of Graduate Studies, Computer Science, University of Rhode Island
2003-2009 Assistant Professor in Computer Science and Statistics, University of Rhode Island
2002-2003 Lecturer in Computer Science, University of Rhode Island
1999-2002 Vice President of Software Development, Bluestreak Inc., Newport, RI
1995-1999 Director of Software Development, Thinking Machines Corp., Cambridge, MA
1992-1995 Freelance Software Development Consultant
1990-1992 Software Developer and Project Lead, POET Software, Berlin, Germany
1989-1990 Research Assistant in Computer Science, University of New Hampshire
1988-1989 Teaching Assistant, University of New Hampshire
1985-1988 Software Engineer, CSPI, Boston, MA

Education

PhD in Computer Science, University of Oxford, UK, 1996. Advisor: Joseph Goguen
MS in Computer Science, University of New Hampshire, 1990.
BS in Electrical Engineering, High Distinction, University of Rhode Island, 1985.

Research Interests

Machine learning, data science, programming language semantics and implementation, computational logic, logic programming.

Skills

Machine learning, data science, software architecture, cloud and web-based computing, team leadership, team building, mentoring, project management.

Technologies

Python, Ply, Antlr, AWS, Django, Pandas, Scikit-Learn, TensorFlow, SVM, RandomForest, Self-Organizing Maps, SQL, R, C/C++, Swift, Rust, Java, Fortran 9x, HPF, map-reduce, OpenMP, Rose, LLVM, Prolog, Maude, Linux/Unix, MacOS, Windows.

Recent Projects

1. **Microservices architecture for a recommendation engine** – architected and implemented the first version of theinnovationscout.com’s recommendation engine. Embedded the proprietary recommendation engine, which I developed for the company, in a microservices architecture which then in turn was deployed as part of an AWS ecosystem.
2. **Pattern-level programming with Asteroid** – I designed and implemented an experimental new programming language called Asteroid around the pattern-level programming paradigm. Rather than focusing on values or objects, in pattern-level programming one focuses on structure and the main computational mechanism is pattern matching. Asteroid has been released as an open source project on github.
3. **Intelligent design assistant for CAD/CAM** – with the recent price drop in CNC machines and 3D printers CAD/CAM is now a reality for even small enterprises. However, the technical expertise required to successfully use these machines is daunting. The aim of this project is to provide support based on machine intelligence in both the design and the manufacturing phases of product development. We currently have a proof of concept intelligent designer for musical instrument fabrication.

Publications

Journal Articles

1. *Pattern-level Programming in Asteroid*, Lutz Hamel, International Journal of Programming Languages and Applications (IJPLA), Vol.08, No.1/2/3/4, pages 1-21, October 2018.
2. *Self-Organizing Map Convergence*, Robert Tatoi, Lutz Hamel, The International Journal of Service Science, Management, Engineering, and Technology (IJSSMET), IGI Global, Vol. 9, Issue 2, pages 61-85, 2018. (**invited journal paper**)
3. *Advanced Classification of Carbonate Sediments Based on Physical Properties*, Tania Lado-Insua, Lutz Hamel, Kathryn Moran, Louise M. Anderson, and Jody M. Webster, Sedimentology, Volume 62, Issue 2, pages 590-606, February 2015, DOI:10.1111/sed.12168.
4. *Adverse moisture events predict seasonal abundance of Lyme disease vector ticks (Ixodes scapularis)*, Kathryn A Berger, Howard S Ginsberg, Katherine D Dugas, Lutz H Hamel and Thomas N Mather, Parasites & Vectors 2014, 7:181 doi:10.1186/1756-3305-7-181
5. *Bayesian Probability Approach to Feature Significance for Infrared Spectra of Bacteria*, Lutz Hamel, Chris W. Brown, Applied Spectroscopy, Volume 66, Number 1, 2012.
6. *Sensitivity of Raman Spectra to Chemical Functional Groups*, Kevin Judge, Chris W. Brown, and Lutz Hamel. Appl Spectrosc. 2008 Nov;62(11):1221-5.
7. *Sensitivity of Infrared Spectra to Chemical Functional Groups*, Kevin Judge, Chris W. Brown, and Lutz Hamel. Anal. Chem., 80 (11), 4186-4192, 2008.
8. *Unsupervised Learning in Detection of Gene Transfer*, Lutz Hamel, Neha Nahar, Maria S. Poptsova, Olga Zhaxybayeva, and J. Peter Gogarten. Journal of Biomedicine and Biotechnology, vol. 2008, Article ID 472719, 7 pages, 2008. doi:10.1155/2008/472719
9. *PentaPlot: A Software Tool for the Illustration of Genome Mosaicism*, Lutz Hamel, Olga Zhaxybayeva, and J. Peter Gogarten. BMC Bioinformatics, 2005 6:139, <http://www.biomedcentral.com/1471-2105/6/139>
10. *The Error Engine*, Judd Morrissey, Lori Talley and Lutz Hamel. Performance Research, Vol 9 Issue 2, pp 63, December 2004.
11. *Visualization of the phylogenetic content of five genomes using dekapentagonal maps*, Olga Zhaxybayeva, Lutz Hamel, Jason Raymond and J Peter Gogarten. Genome Biology, 2004 5:R20, <http://genomebiology.com/2004/5/3/R20>

12. *Industrial Strength Compiler Construction with Equations*, Lutz Hamel, ACM SIGPLAN Notices, Vol 27(8), August 1992.

Books & Book Chapters

1. *Programming Language Implementation with Python*, Lutz Hamel, Franklin, Beedle & Assoc., under contract.
2. *Knowledge Discovery with Support Vector Machines*, Lutz Hamel, Wiley & Sons, 2009.
3. *Customer Relationship Management and Knowledge Discovery in Databases*. Dholakia, N., Joungh Hae Bang, Lutz Hamel and Seung-Kyoon Shim. IN: Encyclopedia of Information Science and Technology. 2d ed. 2009. II:902-907.
4. *Database Queries, Data Mining and OLAP*, Lutz Hamel, The Encyclopedia of Data Warehousing and Mining, 2nd Edition, Idea Group Publishers, 2008.
5. *Model Assessment with ROC Curves*, Lutz Hamel, The Encyclopedia of Data Warehousing and Mining, 2nd Edition, Idea Group Publishers, 2008.
6. *A Brief Tutorial on Database Queries, Data Mining and OLAP*, Lutz Hamel, The Encyclopedia of Data Warehousing and Mining, Idea Group Publishers, 2005.
7. *The CRM-KDD Nexus*, Nikhilesh Dholakia, Jounghae Bang, Lutz Hamel and Seung-Kyoon Shin, Encyclopedia of Information Science and Technology, pp 2803-2808, Idea Group Publishers, 2005.
8. *An Optimizing C* Compiler for a Hypercube Multicomputer*, in Languages, Compilers, and Run-Time Environments for Distributed Memory Machines, pp. 285-298, Elsevier Science Publishers, 1992. J. Saltz and P. Mehrotra (eds.). Joint publication with Philip Hatcher and Michael Quinn.

Refereed Conference Proceedings

1. *VSOM: Efficient, Stochastic Self-Organizing Map Training*, Lutz Hamel, Intelligent Systems Conference (IntelliSys) 2018, K. Arai et al. (Eds.): Intelligent Systems and Applications, Advances in Intelligent Systems and Computing 869, pp. 1–17, https://doi.org/10.1007/978-3-030-01057-7_60, Springer, 2019.
2. *Evaluating Self-Organizing Map Quality Measures as Convergence Criteria*, Gregory Breard and Lutz Hamel, Proceedings of the 2018 International Conference on Data Science (ICDATA'18), Robert Stahlbock, Gary M. Weiss, Mahmoud Abou-Nasr (Eds.), ISBN: 1-60132-481-2, pp 86-92, CSREA Press, 2018.
3. *Assortative Mixture of English Parts of Speech*, Leonard, T., Hamel, L., Daniels, N.M. and Katenka, N.V., Complex Networks & Their Applications VI, Proceedings of Complex Networks 2017, pp 463- 476, Springer Verlag, 2017.
4. *SVM Constraint Discovery using KNN applied to the Identification of Cyberbullying*, D. Ducharme, L. Costa, L. DiPippo, and L. Hamel. Proceedings of the 2017 International Conference on Data Mining (DMIN'17), pp111-117, 2017, Las Vegas, Nevada, USA, ISBN: 1-60132-453-7, CSREA Press.
5. *Formal Methods: A First Introduction using Prolog to specify Programming Language Semantics*, Lutz Hamel. Proceedings of the 12th International Conference on Foundations of Computer Science (FCS'16), pp70-76, July 25-28, 2016, Las Vegas, Nevada, USA, ISBN: 1-60132-434-0, CSREA Press.
6. *Protein Structure-Function Analysis with Self-Organizing Maps*, Seojoo Lim, Stephen Jaegle, and Lutz Hamel. Proceedings of the 17th International Conference on Bioinformatics & Computational Biology (BIOCOMP'16), pp10-16, July 25-28, 2016, Las Vegas, Nevada, USA, ISBN: 1-60132-428-6, CSREA Press.

7. *Self-Organizing Map Convergence*, Robert Tautoian and Lutz Hamel. Proceedings of the 2016 International Conference on Data Mining (DMIN'16), pp92-98, July 25-28, 2016, Las Vegas, Nevada, USA, ISBN: 1-60132-431-6, CSREA Press.
8. *SOM Quality Measures: An Efficient Statistical Approach*, Lutz Hamel, Proceedings of the 11th International Workshop WSOM 2016, Houston, Texas USA, E. Merenyi et al. (eds.), Advances in Self-Organizing Maps and Learning Vector Quantization, Advances in Intelligent Systems and Computing 428, Springer, pp 49-59, DOI 10.1007/978-3-319-28518-4_4, 2016.
9. *Cartogram Data Projection for Self-Organizing Maps*, David H. Brown and Lutz Hamel. Proceeding of the 2012 International Conference on Data Mining, pp91-97, July 16-19, 2012, Las Vegas Nevada, USA.
10. *A Population Based Convergence Criterion for Self-Organizing Maps*, Lutz Hamel and Benjamin Ott. Proceeding of the 2012 International Conference on Data Mining, pp98-104, July 16-19, 2012, Las Vegas Nevada, USA.
11. *Improved Interpretability of the Unified Distance Matrix with Connected Components*, Lutz Hamel and Chris W. Brown. Proceeding of the 7th International Conference on Data Mining, July 18-21, 2011, Las Vegas Nevada, USA, ISBN: 1-60132-168-6, pp338-343, CSREA Press, 2011.
12. *Experience Report: Erlang in Acoustic Ray Tracing*, Christian Convey, Andrew Fredricks, Christopher Gagner, Douglas Maxwell, and Lutz Hamel. Proceeding of the 13th ACM SIGPLAN International Conference on Functional programming, pp115-118, Victoria, BC, Canada, 2008.
13. *Unsupervised Learning in Spectral Genome Analysis*, Lutz Hamel, Neha Nahar, Maria S. Poptsova, Olga Zhaxybayeva, and J. Peter Gogarten. Proceeding of the IEEE Conference Frontiers in the Convergence of Bioscience and Information Technologies (FBIT 2007), October 2007, pp317 - 321, IEEE Press, ISBN 0-7695-2999-2.
14. *GPX: A Tool for the Exploration and Visualization of Genome Evolution*, Neha Nahar, Maria S. Poptsova, Lutz Hamel, and J. Peter Gogarten. Proceedings of the IEEE 7th International Symposium on Bioinformatics & Bioengineering (BIBE07), Oct 14th-17th 2007, Boston, pp1338 - 1342, IEEE Press, ISBN 1-4244-1509-8.
15. *An Inductive Programming Approach to Algebraic Specification*, Lutz Hamel and Chi Shen. Proceedings of the ECML 2007 Workshop on Approaches and Applications of Inductive Programming (AAIP'07), September 2007, pp. 3-15.
16. *The Internet Democracy: A Predictive Model Based on Web Text Mining*, Scott Pion and Lutz Hamel. Proceedings of the 2007 International Conference on Data Mining. Robert Stahlbock, Sven F. Crone, Stefan Lessman, Hamid R. Arabnia; Editors. pp292-298, CSREA Press, U.S.A., 2007.
17. *Comparing the Results of Support Vector Machines with Traditional Data Mining Algorithms*, Scott Pion and Lutz Hamel, Proceedings of the 2007 International Conference on Data Mining. Robert Stahlbock, Sven F. Crone, Stefan Lessman, Hamid R. Arabnia; Editors. pp79-83, CSREA Press, U.S.A., 2007.
18. *Visualizing Support Vector Machines with Unsupervised Learning*, Lutz Hamel, IEEE 2006 Symposium on Computational Intelligence in Bioinformatics and Computational Biology, pp148-155, Toronto, Canada, IEEE, 2006, ISBN 1-4244-0623-4.
19. *Toward Protein Structure Analysis with Self-Organizing Maps*, Lutz Hamel, Gongqin Sun, and Jing Zhang, IEEE 2005 Symposium on Computational Intelligence in Bioinformatics and Computational Biology, pp506-513, La Jolla, CA, IEEE, 2005, ISBN 0-7803-9387-2.

20. *A Genetic Algorithm for Energy Minimization in Bio-molecular Systems*, Xiaochun Weng, Lutz Hamel, Lenore Martin and Joan Peckham, IEEE 2005 Congress of Evolutionary Computation, pp49-56, Edinburgh, UK, IEEE, 2005, ISBN 0-7803-9363-5.
21. *Classification for Scaling Methods in Data Mining*, Eric Kyper, Lutz Hamel, and Scott Lloyd, Annual Meeting of Decision Sciences Institute (DSI 2005), San Francisco, 2005.
22. *Data Mining Of CRM Knowledge Bases For Effective Market Segmentation*, Jounghae Bang, Nikhilesh Dholakia, Lutz Hamel, and Ruby Roy Dholakia, Proceedings of the 6th International Conference on Enterprise Information Systems (ICEIS 2004), Porto, Portugal, 2004.
23. *Comparing CRM-based Data Mining and Collaborative Filtering as E-Commerce Strategic Tools*, Nikhilesh Dholakia, Jounghae Bang, Lutz Hamel, and Ruby Roy Dholakia, Proceedings of the 2004 IRMA International Conference, New Orleans, Information Resources Management Association, 2004.
24. *Evolutionary Search in Inductive Equational Logic Programming*, Lutz Hamel, Proceedings of the Congress on Evolutionary Computation, pp2426-2434, Canberra, Australia, IEEE, 2003, ISBN 0-7803-7805-9
25. *Breeding Algebraic Structures--An Evolutionary Approach To Inductive Equational Logic Programming*, GECCO 2002: Proceedings of the Genetic and Evolutionary Computation Conference, 2002, pp 748-755, Morgan Kaufmann Publishers.
26. *Adding Equations to PCCTS*, Lutz Hamel, Proceedings of the Second Annual Workshop on PCCTS, 1995.
27. *Towards a Provably Correct Compiler for OBJ3*, Proceedings of the Programming Language Implementation and Logic Programming Symposium 1994, Lecture Notes in Computer Science 844, Springer-Verlag, 1994. Joint publication with Joseph Goguen.
28. *UCG-E: An Equational Logic Programming System*, Proceedings of the Programming Language Implementation and Logic Programming Symposium 1992, Lecture Notes in Computer Science 631, Springer-Verlag, 1992.

Refereed Abstracts and Posters

1. *Self Organizing Maps and Locally Linear Embedding for Dimensionality Reduction*, Vishakh Gopu and Lutz Hamel, Poster presented at the Sigma Xi Conference 2015, **won best poster** in the category of computer science, mathematics, and engineering.
2. *Population Based Convergence Criterion for Self-Organizing Maps*, Benjamin Ott, Gregory Breard, Lutz Hamel, Poster presented at the NESS meeting at UCONN, 2013.
3. *Inductive Acquisition of Algebraic Specifications*, Lutz Hamel and Chi Shen, Abstract presented at Workshop for Algebraic Development Techniques (WADT 2006), La Roche, Belgium, June, 2006.
4. *Protein Structure Analysis with Self-Organizing Maps*, Jing Zhang, Gongqin Sun, and Lutz Hamel, Poster presented at the INBRE Summer meeting, Exeter, Rhode Island, June, 2005.
5. *High-Throughput Active Site Structure Analysis of Proteins Using Self-Organizing Map-Based Unsupervised Machine Learning*, Jing Zhang, Gongqin Sun, and Lutz Hamel. Poster presented at the INBRE winter meeting, Bristol, Rhode Island, January, 2005.
6. *Can we predict IVF outcomes?* Julie Goodside, Leah Passmore, Lutz Hamel, Liliana Gonzalez, Tali Silberstein, Richard Hackett, David L. Keefe and James R. Trimarchi, Abstract presented at the 2004 First Quarterly Meeting of The New England Fertility Society and The Annual Assembly of the New England Fertility Society (NEFS2004), March 12 -14, 2004.
7. *Comparing Data Mining and Logistic Regression for Predicting IVF Outcome*, J. R. Trimarchi, J. Goodside, L. Passmore, T. Silberstein, L. Hamel, L. Gonzalez, Abstract

presented at the 59th Annual meeting of the American Society for Reproductive Medicine (ASRM 2003), San Antonio, TX, October 11-15, 2003.

8. *An Improved Probability Mapping Approach*, Olga Zhaxybayeva, Lutz Hamel, and J. Peter Gogarten, Poster presented at the Annual Retreat of the Department of Molecular and Cell Biology, University of Connecticut, Crandall Lodge, Tolland, CT, September 6, 2003.
9. *An Improved Probability Mapping Approach*, Olga Zhaxybayeva, Lutz Hamel, and J. Peter Gogarten, Poster presented at the Annual Meeting of the Canadian Institute for Advanced Research, Evolutionary Biology Program at White Point Beach, Nova Scotia, Canada September 10-14, 2003.
10. *An Improved Probability Mapping Approach*, Olga Zhaxybayeva, Lutz Hamel, and J. Peter Gogarten, Poster presented at Exobiology Principal Investigators' Seventh, Triennial Science Conference, NASA Ames Research Center, Moffett Field, CA, August 25-29, 2003.
11. *Comparing Data Mining and Logistic Regression for Predicting IVF Outcome*, J. R. Trimarchi, J. Goodside, L. Passmore, T. Silberstein, L. Hamel, L. Gonzalez, Poster presented at the Annual BRIN meeting, Exeter, RI, July 11, 2003.
12. *Genetic Operators and Inductive Logic Programming: Fisher's Theorem of Natural Selection*, Lutz Hamel. Poster accepted at the Genetic and Evolutionary Computation Conference (GECCO 2003), Chicago, July 2003, retracted due to personal reasons.

Supervised Theses

1. *Implementation of Self-Organizing Maps with Python*, Li Yuan, MS Thesis, May 2018.
2. *Plat: A Web Based Protein Local Alignment Tool*, Stephen H. Jaegle, MS Thesis, 2017.
3. *Evaluating Self-Organizing Map Quality Measures as Convergence Criteria*, Gregory T. Breard, MS Thesis, 2017.
4. *Deep Belief Networks in Clojure*, J. Christopher Sims, MS Thesis, December 2015. ****Best CS Thesis Award****
5. *Protein Structure Analysis with SOM*, Seonjoo Lim, MS Thesis, December 2015.
6. *Training And Source Code Generation For Artificial Neural Networks*, Brandon Winrich, MS Thesis, November 2015.
7. *A Constructive Semantics for Rewriting Logic*, Michael N. Kaplan, PhD Thesis, December 2014.
8. *Use Of Reinforcement Learning (RL) For Plan Generation In Belief-Desire-Intention (BDI) Agent Systems*, Jose L. Feliu, MS Thesis, December 2013.
9. *Towards Efficient Stochastic Optimization of Functions of Convex Sets*, Christian Convey, PhD Thesis, May 2013.
10. *A Self-Interpreter for Prolog*, Aseel Alkhelaiwi, MS Thesis, April 2012.
11. *Cartogram Data Projection for Self-Organizing Maps*, David Brown, MS Thesis, April 2012. ****Best CS Thesis Award****
12. *A Convergence Criterion for Self-Organizing Maps*, Benjamin Ott, MS Thesis, April 2012.
13. *Bipartition Visualization using Self-Organizing Maps*, Neha Nahar, MS Thesis, July 2007.
14. *The Internet Democracy: A Predictive Model Based On Web Text Mining*, Scott Pion, MS Thesis, April 2007.
15. *Automatic Narrative Evolution Web Crawler*, Hyejin Yun, MS Thesis, April 2006.
16. *Evolutionary Concept Learning in Equational Logic*, Chi Shen, MS Thesis, April 2006.

17. *Text Mining with Support Vector Machines and Non-Negative Matrix Factorization Algorithms*, Neelima Guduru, MS Thesis, April 2006.
18. *Support Vector Machines as Pattern Classifier for In Vitro Fertilization Data*, Natalya Dymova, MS Thesis, April 2005.
19. *A Genetic Algorithm for Bio-Molecular Systems*, Wendy Weng, MS Thesis, April 2005.
20. *Prediction Analysis Using In Vitro Fertilization Data Based on Data Mining Techniques*, Julie Goodside, MS Thesis, May 2004.

Technical Reports and White Papers

1. *Inductive Acquisition of Algebraic Specifications*, Lutz Hamel, and Chi Shen, Technical Report TR06-317, Department of Computer Science and Statistics, University of Rhode Island, 2006.
2. *Evaluating the SVM Component in Oracle 10g Beta*, Lutz Hamel, Angela Uvarov, and Susie Stephens, Technical Report TR04-299, Department of Computer Science and Statistics, University of Rhode Island, 2004.
3. *Automatic Narrative Evolution: A White Paper*, Lutz Hamel, Judd Morrissey and Lori Talley, White Paper, errorengine.org, 2004.
4. *On the Use of Machine Learning in Formal Software Verification*, Lutz Hamel, Technical Report TR03-294, Dept. of Computer Science and Statistics, University of Rhode Island, 2003.
5. *Assessing Decision Tree Models for Clinical In-Vitro Fertilization Data*, J. R. Trimarchi, J. Goodside, L. Passmore, T. Silberstein, L. Hamel, L. Gonzalez, Technical Report TR03-296, Dept. of Computer Science and Statistics, University of Rhode Island, 2003.
6. *Introducing TRIM*, Lutz Hamel, Technical Report TR01-283, Dept. of Computer Science and Statistics, University of Rhode Island, 2001.
7. *An Algebraic View of Inductive Equational Logic Programming*, Lutz Hamel, Technical Report TR00-278, Dept. of Computer Science and Statistics, University of Rhode Island, 2000.
8. *The Object-Oriented Architecture of High-Performance Compilers*, Lutz Hamel, Diane Meirowitz and Spiro Michaylov, Technical Report, Thinking Machines Corporation, 1996.
9. *Towards a provable correct compiler for OBJ3*, Lutz Hamel, Programming Research Group Technical Report TR-1-94, Oxford University, February 1994, 52pp.

Invited Talks

- *Machine Learning: Allgemeine Informationen und Funktionsweise*, Lutz Hamel, Talk, IT-Team vom Landratsamt Böblingen, Germany, May '18.
- *The Evolution of Programming Languages: A Personal Perspective*, Lutz Hamel, Talk, URI Programming Language Research Group, Spring '16.
- *Automatic Theorem Proving: A Very Brief Introduction*, Lutz Hamel, Talk, URI Discrete Mathematics Group, Spring '15.
- *Big Data: The Science of Patterns*, Lutz Hamel, Talk, High-Performance Computing Class, Fall '14.
- *Advances in Self-Organizing Maps*, Lutz Hamel, Invited Talk, Connecticut Data Mining Conference, April 2012.
- *Investigating Support Vector Machines with Unsupervised Learning*, Lutz Hamel, Invited Talk, DIMACS Workshop on Discrete Mathematical Problems in Computational Biomedicine DIMACS Center, CoRE Building, Rutgers University, April 18 - 20, 2007.

- *Expect the Unexpected: AI in Games and Narrative*, Lutz Hamel, E-Fest 2006, Brown University, Providence, March 22-24, 2006.
- *Bioinformatics at the University of Rhode Island*, Lutz Hamel, given at Framingham State College, Bioinformatics Colloquium Series, February 2005.
- *Data Mining and Science Informatics*, Lutz Hamel, Chemical Engineering Seminar Series, University of Rhode Island, February 2005.
- *Protein Structure Analysis with Self-Organizing Maps*, Lutz Hamel, INBRE Bioinformatics Seminar Series, University of Rhode Island, August 2005.
- *A Genetic Algorithm for Energy Minimization in Bio-molecular Systems*, Lutz Hamel, Chemistry Department Seminar Series, University of Rhode Island, September 2005.

Academic Service

Program Committees

- Decision Sciences Institute Annual Conference, 2005
- Symposium on Computational Intelligence in Bioinformatics and Computational Biology (CIBCB 2006)
- Symposium on Computational Intelligence in Bioinformatics and Computational Biology (CIBCB 2007)
- Genetic and Evolutionary Computation Conference, Biological Applications (GECCO 2007)
- Frontiers in the Convergence of Bioscience and Information Technologies (FBIT 2007)
- Congress on Evolutionary Computation, Bioinformatics Track (CEC 2007)
- BIONETICS 2007
- CIBCB 2008
- World Congress on Computational Intelligence (WCCI 2008)
- GECCO 2008
- EvoBIO 2008
- AAIP '09
- CEC '09
- CIBCB '09
- CSDA '09
- EvoBIO '09
- GECCO '09
- CEC '10
- CIBCB '10
- EvoBIO '10
- CIBCB '11
- SCCI '11
- AAIP '11
- CIBCB '12
- GECCO '12
- ECTA '13
- GECCO '13
- ECTA '14
- GECCO '14
- ECTA '15
- ECTA '16
- IJCCI '17
- IJCCI '18

Reviewer

- Reviewer for the *Encyclopedia of Data Warehousing and Mining* edited by John Wang, Montclair State University, USA. 1st and 2nd Editions
- Reviewer for book “Artificial Intelligence: Foundations of Computational Agents” for Cambridge University Press.
- IEEE Transactions for Evolutionary Computation
- International Journal of Data Mining, Modelling and Management
- IEEE Transactions on Neural Networks and Learning Systems
- Reviewer for Journal of Applied Logic

Committees

- Faculty search committee member Fall 2018
- Arts & Sciences TA Allocation Committee – September 2018 till present
- CS Graduate Committee Chair, September 2017 till present
- CS Graduate Curriculum Committee – chair till 9/17
- Working Group on Computational Statistics and Machine Learning – founding chair till 9/17, member till present.
- CS Comprehensive Exam Committee – chair 2005 till 2017
- Data Science Degree Committee - ongoing
- Chair of the Department Chair Search Committee in 2010
- Chair of the CSC lecturer search committee in 2015
- Labs and Research Support
- Data science cluster hire search committee 2015

Outreach

- GRRL Tech 2016
- Presenter at URI Big Ideas Forum 2016
- newworknewculture.org and positivity-zone.info
- Member of Advisory Board for RI startup theinnovationscout.com

Other

- Grant proposal reviewer for NASA’s AISRP program, 2005
- Publicity chair for the Symposium on Computational Intelligence in Bioinformatics and Computational Biology 2008
- Member of editorial board, International Journal of Data Analysis Techniques and Strategies (2007-2009)
- Member of the Bioinformatics and Bioengineering Technical Committee (BBTC) of the Computational Intelligence Society (CIS) of the Institute of Electrical and Electronic Engineers (IEEE), 2005-2009.

Support & Awards

- Intel FPGA Early Access Grant 2017.
- University of Rhode Island Project Completion Grant 2016, \$2100.
- NASA Applied Information System Research Program (NNG04GP90G) Grant \$350k, Co-Pi, 2004-2008.
- University of Rhode Island Faculty Development Research/Creative Activities Award, \$1000, 2006.
- NIH Grant Number P20 RR016457 from the BRIN/INBRE Program of the National Center for Research Resources, Co-PI, \$40k, 2005.

Software Systems

Asteroid – A pattern oriented programming language.

POPSOM – An SOM package for R based on our new convergence criterion.

GPX - Gene Phylogeny eXplorer for spectral genome analysis.

PentaPlot - a visualization system for phylogenetic content.
ErrorEngine - a system for automatic narrative evolution.
UCG-E - an equational logic programming system.
OBJ3 - an equational specification system.
TRIM - an abstract machine for order-sorted rewriting.

Teaching

CSC110 – Introduction to Computer Science
CSC301 – Fundamentals of Programming Languages
CSC305 – Software Engineering
CSC310 – Programming for Data Science
CSC402 – Programming Language Implementation
CSC445 – Introduction to the Theory of Computation
MTH447 – Discrete Mathematics
CSC481 – An Introduction to AI with Games
CSC501 – Programming Language Semantics
CSC502 – Advanced Compiler Techniques
CSC544 – Theory of Computation
CSC581 – Special Topics in AI: Support Vector Machines
CSC591L – Advanced Logic Programming
CSC592D – Introduction to Data Mining
CSC592CM – Cognitive Modeling