MARK HARLAN GOADRICH, Ph. D.

Department of Mathematics and Computer Science
Hendrix College
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EDUCATION

University of Wisconsin - Madison, Madison, WI
Computer Sciences, M.S., 2000, Ph.D., 2007

Kenyon College, Gambier, OH
Mathematics and Philosophy, A.B., 1998

EMPLOYMENT

Associate Professor, 2014 - Present
Department of Mathematics and Computer Sciences
Hendrix College, Conway, AR

Associate Professor (tenured), 2012 - 2014
Assistant Professor, 2007 - 2012
Broyles Eminent Scholars Chair of Computational Mathematics
Department of Mathematics and Computer Sciences
Centenary College of Louisiana, Shreveport, LA

Research Assistant, 2001 - 2007
with Professor Jude Shavlik
Department of Computer Sciences
University of Wisconsin - Madison

Thesis on Inductive Logic Programming and Biomedical Information Extraction

Instructor, 2000 - 2001
Department of Computer Sciences
University of Wisconsin - Madison

Introduction to Artificial Intelligence, Summer 2001
Introduction to Programming in Java, Spring 2000, 2001

Teaching Assistant, 1998 - 2000, 2007
Department of Computer Sciences
University of Wisconsin - Madison

Introduction to Programming Languages, Spring 2007
Introduction to Artificial Intelligence, Spring, Summer, Fall 1999
Introduction to Computers, Fall 1998

Research Analyst, 2000
Southwest Research Institute
San Antonio, Texas

PUBLICATIONS

"Automated Playtesting with RECYCLEd CardStock", Connor Bell and Mark Goadrich, *Game Puzzle Design Journal, Vol 2, Issue 1, July 2016*

"Using IPython for Data Science and Scientific Computing Applications", Mark Goadrich, *Tutorial, CCSC - Mid South Conference*, April 1-2 2016, Memphis TN

"An undergraduate laboratory activity on molecular dynamics simulations", Benjamin Spitznagel, Paige Pritchett, Troy C. Messina, Mark Goadrich, and Juan Rodriguez, *2016 Innovative Lab Series on MD, January/February issue of Biochemistry and Molecular Biology Education (BAMBED)*

"Emerging Patterns of Order and Differentiation: An Agent-Based Model of Social Complexity", Loren Demerath and Mark Goadrich *78th Annual Meeting of the Southern Sociological Society, March 25-28, 2015, New Orleans, LA*

"Incorporating Tangible Computing Devices Into CS1", Mark Goadrich *CCSC Mid-South, Journal of Computing Sciences in Colleges*, April 4-5 2014, Memphis, TN.

"Exploring and Evolving Process-oriented Control for Real and Virtual Fire Fighting Robots", Kathryn Hardey, Eren Corapcioglu, Molly Mattis, Mark Goadrich and Matthew Jadud, *GECCO 2012 (Genetic and Evolutionary Computation Conference)*, Full Paper, July 7-11 2012, Philadelphia, PA.

"Exploring the use of Android OS in CS2", Mark Goadrich, Matthew Jadud and Jacob Jennings, *SMACK 2011, SmartPhones in the Currriculum Workshop, 24th IEEE Conference on Software Engineering Education and Training*, May 22, 2011, Waikiki, Honolulu, Hawaii.

"Generating Pronounceable Nonsense Words", Mark Goadrich, *Nifty Assignments Session, CCSC - Mid South Conference*, April 1-2 2011, Conway AR

"Smart Smartphone Development: iOS vs Android", Mark Goadrich and Michael Rogers, *SIGCSE 2011, The 42nd ACM Technical Symposium on Computer Science Education*, March 9-12, 2011, Dallas, TX.

"Analyzing 2-Player Babylon", Mark Goadrich and Mark Schlatter, *Integers*, April 2011

"TopSpin and Communication/Origami" Mark Goadrich *Nifty Assignments Session, CCSC - Mid South Conference*, March 25-26 2010, Searcy AR.

"Distinguishing Dactyls of Crab Species Using Relational Machine Learning," with Jeffrey Agnew, *Geological Society of America Annual Meeting, Paleontology IV - Stratigraphy and Morphology*, October 8, 2008

"Learning Comprehensible Relational Features to Distinguish Subfossil Decapod Crustacean Dactyls," with Jeffrey Agnew, *24th International Conference on Inductive Logic Programming (ILP), Late Breaking Papers*, Prague Czech Republic, 10th - 12th September, 2008

"Learning Ensembles of First-Order Clauses that Optimize Precision-Recall Curves," *Ph. D. Thesis*, University of Wisconsin - Madison, August, 2007.

"Combining Clauses with Various Precisions and Recalls to Produce Accurate Probabilistic Estimates," with Jude Shavlik, *The Proceedings of the 17th International Conference on Inductive Logic Programming*, Corvallis, OR, June, 2007.

"The Relationship Between Precision-Recall and ROC Curves," with Jesse Davis, *The Proceedings of the 23rd International Conference on Machine Learning*, Pittsburgh, PA, June 2006.

"Gleaner: Creating Ensembles of First-Order Clauses to Improve Recall-Precision Curves," with

Louis Oliphant and Jude Shavlik, *Machine Learning Journal*, Special Issue on ILP, Volume 64, pages 231-262, 2006.

"Learning to Extract Genic Interactions using Gleaner," with Louis Oliphant and Jude Shavlik, *The Proceedings of the Learning Language in Logic Workshop at the International Conference on Machine Learning*, Bonn, Germany, July 2005.

"Learning Ensembles of First-Order Clauses for Recall-Precision Curves: A Case Study in Biomedical Information Extraction," with Louis Oliphant and Jude Shavlik *Proceedings of the 14th International Conference on Inductive Logic Programming*, Porto, Portugal, September 2004.

"Model Robustness versus Parameter Evolution: Assortative Interaction in a Bargaining Game," *In Proceedings of the NAACSOS Methods, Toolkits and Techniques Section Workshop, AGENT 2003*, Chicago, IL, October 2003.

PRESENTATIONS

"Card Stock: Abstract Card Game Design and Analysis", Connor Bell and Mark Goadrich *Fourth Annual Central Arkansas Undergraduate Summer Research Symposium, July 22, 2015, Little Rock, AR*

"Agent-based modeling as a tool for a discovery-based TLC experiment", David Brownholland and Mark Goadrich. *249th ACS National Meeting & Exposition, CHED: Division of Chemical Education*, March 22-26, 2015, Denver, CO

"Explaining the Emergence of Social Order as Energy Processing: An Agent-Based Model", Loren Demerath and Mark Goadrich, *Roundtable Presentation, American Sociological Association Annual Meeting*, Aug 17 2014, San Francisco, CA.

"LJING: Learn Java In N Games", Peter Drake and Mark Goadrich, *SIGCSE 2014 Workshop, The 45th ACM Technical Symposium on Computer Science Education*, March 2014, Atlanta, GA.

"Using Machine Learning to Predict a Bad Day", Alexandra Larsen and Mark Goadrich, *Centenary College Student Research Forum Presentation*, April 19 2013

"Undergraduate Research Experiences", Gabriel Ferrer, Mark Goadrich, and Vamsi Paruchuri, *CCSC MidSouth 2013 Panel*, April 5-6 2013, Fort Smith, AR.

"Node: Digital Pedagogy, Persuasive Technology, and Social Change", Mark Goadrich, Michelle Glaros, Jessica Hawkins and Loren Demerath, *SLSA Nonhuman 2012 Panel*, September 30 2012, Milwaukee, WI.

"A Hands-on Comparison of iOS and Android", Mark Goadrich and Michael Rogers, *SIGCSE 2012 Workshop, The 43nd ACM Technical Symposium on Computer Science Education*, February 29 2012, Raleigh, NC.

"Colliding Galaxy Simulations", Brandi Candler, Juan Rodriguez, Mark Goadrich, *Centenary College Student Research Forum Presentation*, April 15 2011

"Development of Fire Fighting Rescue Robots in occam-π", Kathryn Hardey, Molly Mattis, Mark Goadrich, Matthew Jadud, *Centenary College Student Research Forum Poster*, April 14 2011

"ADDER: Academic Degree Database Electronic Resource", Bradlee Robertson, Kathryn Hardey, Mark Goadrich *Centenary College Student Research Forum*, April 23, 2010

"SmartSweeper: Neural Network for Minesweeper", Nolan Baker, Mark Goadrich *Centenary College Student Research Forum*, April 23, 2010

"Design and Construction of an Automated Community Bicycle Loan/Return System", Richard

Lopez, Kenneth Roland Womack, Mark Goadrich and Troy C. Messina, *Centenary College Student Research Forum*, April 24, 2009

"Robocup Rescue: Artificial Intelligence and Controller for Virtual Robots", Bradlee Robertson and Mark Goadrich, *Centenary College Student Research Forum*, April 23, 2009

"Developing Educational Software for the XO-1 (COBBLE, Space Tag, and Cell Management)", Nolan Baker and Mark Goadrich, *Centenary College Student Research Forum*, April 23, 2009

"Python In Education" Birds of a Feather co-organizer, *ACM SIGCSE Technical Symposium on Computer Science Education*, Chattanooga, TN, March 5-7, 2009

"Design and Construction of an Automated Community Bicycle Loan/Return System", Richard Lopez, Kenneth Roland Womack, Mark Goadrich and Troy C. Messina, *Society of Physics* Students Zone 10 Annual Meeting, Feb 28th, 2009

SELECTED STUDENT RESEARCH PROJECTS

Fall 2017 - Spring 2018, Taylor Baer, Chantal Danyluk
Evaluating the Aesthetics of Diverse Computational Art Algorithms

Summer 2015 - Spring 2017, Connor Bell, Collin Shaddox, Anna Holmes
Card Stock: Abstract Card Game Design and Analysis

Fall 2014 - Spring 2015, Bryan Urban
An Analysis of Swarm Based-Bio Inspired Algorithms in the Game Go

Fall 2013, Ryan O'Donnell
Optimizing bus routes for Shreveport SporTran using Agent-Based Modeling

Spring 2013, Jackson Blankstein
Procedural Content Generation for Rouge-like Games

Fall 2012 - Spring 2013, Alexandra Larsen
Sentiment Analysis and FMyLife

Fall 2010, Jacob Jennings
Android4CS2 : Creating Android Resources for Data Structures Courses

Fall 2010 - Summer 2011, Kathryn Hardey and Eren Corapcioglu
Exploring and Evolving Subsumptive Control for Real and Virtual Rescue Robots
Co-PIs: Matt Jadud, Molly Mattis, Allegheny College.

Summer 2010, Jacob Jennings and Kathryn Hardey
Pherophone : Developing Ant-Based Communication for the Android Mobile OS

Spring 2010, Nolan Baker
SmartSweeper : Learning to Play Minesweeper using Neural Networks

Summer 2008 - 2009, Bradlee Robertson
Creating an Intelligent RoboCup Rescue Controller

Summer 2008 - Spring 2009, Richard Lopez and Roland Womack
Designing an Automated Bicycle Checkout System

Summer 2008 - Fall 2008, Nolan Baker
Developing Educational Software for the OLPC Sugar OS

CURRICULUM DEVELOPMENT

Participation in Neuroscience Curriculum Development - Fall 2014 - Present
Development of Centenary Node Living Learning Community - Fall 2011 - Spring 2014
Introduction of Centenary Computational Mathematics track - Spring 2010
Revision of Centenary Computer Science minor - Spring 2008

Courses Taught at Hendrix College:

CSCI 150	Foundations of Computer Science	Fall 2014, 2015, 2016, 2017, Spring 2015
CSCI 151	Data Structures	Spring 2016, 2017
CSCI 285	Scientific Computing	Fall 2014, 2016
CSCI 340	Databases and Web Systems	Spring 2016
CSCI 380	Theory of Computing	Fall 2015, 2017
CSCI 370	Interactive Game Development	Spring 2015, 2017
LBST 100	The Engaged Citizen: Work and Play	Fall 2016, 2017

Courses Taught at Centenary College of Louisiana:

CSC 104	Programming I	Fall 2007
CSC 107	Explorations in Agent Based Modeling	Spring 2010, 2012, 2014
CSC 204	Programming II	Spring 2008
CSC 207	Introduction to Computer Science	Fall 2008, 2009, 2010, 2011, 2012, 2013
CSC 234	Data Structures and Algorithms	Spring 2009, 2010, 2011, 2012, 2013, 2014
CSC 254	Operating Systems	Fall 2007
CSC 277	Bioinformatics	Spring 2009, 2011
CSC 310	Databases	Fall 2009, 2012
CSC 350	Cryptology and Security	Fall 2008, 2011
CSC 396	Artificial Intelligence	Spring 2008, Fall 2010
Math 104	College Algebra	Fall 2007, 2008, 2010
Math 105	Finite Mathematics	Spring 2008
Math 107	Precalculus	Spring 2012
Math 220	Theory of Computing	Fall 2009, 2011, 2013
Math 305	Mathematical Statistics	Spring 2010
Math 310	Discrete Mathematics	Spring 2011
Math 311	Mathematical Models	Spring 2009, 2013

FUNDING

Evaluating the Aesthetics of Diverse Computational Art Algorithms
Mentor, 2017 – 2018 : $7,500
Co-PIs: Taylor Baer, Chantal Danyluk
Computing Research Association for Women

R Across the Curriculum
Principal Investigator, 2012 – 2013 : $1,218
Co-PI: Chris Camfield
Hendrix Faculty Development Grant

Complexity Across Disciplines:
A Blended Learning Course Among ACS Institutions: $8,000
Principle Investigator, 2014 – 2015
Co-PI: Loren Demerath

Improving Mobile User Interface Design using EEG and EyeTracking Devices
Principal Investigator, 2012: $1,500
Centenary College Summer Faculty Research

Making Computer Science Tangible Through Physical and Mobile Devices
Principal Investigator, 2012 – 2013 : $21,918
Co-PI: Troy Messina
Louisiana Board of Regents Support Fund, Undergraduate Enhancement

Extending Classroom Projection to Student Laptops, 2011 : $300
Centenary Muses

Intrinsic Mobile Motivation
Co-Principal Investigator, 2010 : $7,700
Co-PI: Matt Jadud
Google Android Education Grant (in-kind grant of Motorola Droid phones)

Exploring and Evolving Subsumptive Control for Real and Virtual Rescue Robots
Co-Principal Investigator, 2010 – 2011 : $15,500
Co-PIs: Molly Mattis*, Kathryn Hardey*, Eren Corapcioglu*, Matt Jadud
Computing Research Association for Women

Designing Educational Mathematics Software, Creating Virtual Rescue Robots
Co-Principal Investigator, 2008 : $8,500
Co-PIs: Nolan Baker and Bradlee Robertson
Centenary College Student/Faculty Research

COLLEGE SERVICE

Committee on Engaged Learning 2016-18 - Chair 2017-18
Ad-hoc Learning Goals Committee 2015-16
Human Subjects Review Board 2015-16
Centenary Honor Court Advisor 2012-14
Academic Policy Council 2012-14
Faculty Development Committee 2011-12
Learning Resources Committee - Chair 2009-11
Diversity Committee 2008-09
Centenary Faculty Club - Chair 2009-10
Advising of mathematics majors, computer science minors, and first-year students
Faculty Advisor to the Mathematics and Computer Science Club
Faculty Advisor to the Mathematics Contest in Modeling

EXTERNAL SERVICE

CCSC Mid-South Student Papers Co-Chair 2010-11,16-18
CCSC Mid-South Papers Co-Chair 2013-15
CCSC National Partners Chair 2011-13
CCSC Mid-South Conference Chair 2012
Cohabitat Shreveport Board Member 2011-13
SIGCSE Session Chair 2011

PROFESSIONAL AFFILIATIONS

American Association of University Professors (AAUP)
Association for Computing Machinery (ACM)
Consortium for Computing Sciences in Colleges Mid-South Conference (CCSC)
Consortium for Mathematics and Its Applications (COMAP)
Special Interest Group for Computer Science Education (SIGCSE)
Sigma Xi, The Scientific Research Society