

Hiroki Sayama, D.Sc.

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Director, Center for Collective Dynamics of Complex Systems
Professor, Department of Systems Science and Industrial Engineering
Director, Graduate Programs in Systems Science
Director, Advanced Graduate Certificate Program in Complex Systems Science and Engineering
Thomas J. Watson School of Engineering and Applied Science
Binghamton University, State University of New York
P.O. Box 6000, Binghamton, NY 13902-6000

Holds U.S. Citizenship

Education

B.Sc. Information Science, University of Tokyo, Japan (March 1994)

M.Sc. Information Science, University of Tokyo, Japan (March 1996)

D.Sc. Information Science, University of Tokyo, Japan (March 1999)

Thesis title: “Constructing evolutionary systems on a simple deterministic cellular automata space”
Thesis supervisor: Prof. Yoshio Oyanagi

Professional Positions

1999-2002 Postdoctoral Fellow
New England Complex Systems Institute, Cambridge, MA, USA

2000-2001 Associate in Research
Edwin O. Reischauer Institute of Japanese Studies
Harvard University, Cambridge, MA, USA

2002-2004 Assistant Professor
Department of Human Communication
University of Electro-Communications, Tokyo, Japan

2002-present Affiliate
New England Complex Systems Institute, Cambridge, MA, USA

2003-2005 Adjunct Assistant Professor
Department of Complex Systems Science, Graduate School of Information Science
Nagoya University, Nagoya, Japan

2004-2005 Associate Professor
Department of Human Communication
University of Electro-Communications, Tokyo, Japan

- 2006-2011 Assistant Professor
Department of Bioengineering
Department of Systems Science and Industrial Engineering (joint title 2010-2011)
Binghamton University, State University of New York, USA
- 2012-2017 Associate Professor
Department of Bioengineering (2012-2014)
Department of Systems Science and Industrial Engineering (joint title 2012-2014)
Binghamton University, State University of New York, USA
- 2014-2018 Visiting Research Professor
Center for Complex Network Research (CCNR) / Department of Physics
Northeastern University, Boston, USA
- 2017-2018 Associate Professor (non-tenured)
Faculty of Commerce
Waseda University, Tokyo, Japan
- 2017-present Professor
Department of Systems Science and Industrial Engineering
Binghamton University, State University of New York, USA
- 2018-present Professor (non-tenured)
Faculty of Commerce
Waseda University, Tokyo, Japan
- 2018 Adjunct Professor
Department of General Systems Studies, Graduate School of Arts and Sciences
University of Tokyo, Tokyo, Japan

Research Interests: “Complex Systems”***Complex Dynamical Networks***

State-topology coevolution in adaptive networks, generative network automata, social network evolution, network analysis, modeling and simulation, network science and education

Human and Social Dynamics

Collective human decision making, team and organizational dynamics, mental model formation, evolutionary game theory, agent-based modeling and simulation

Artificial Life/Chemistry

Collective behavior of swarms, morphogenetic engineering, self-replication, self-repair, cellular automata, pattern formation, computational models of ecological and evolutionary dynamics, open-ended evolution, nature-inspired computing

Interactive Systems

Interactive evolutionary computation, interactive educational tools, interactive media art

List of Publications and Other Achievements

Continuously updated and available online at <http://bingweb.binghamton.edu/~sayama/pub.html>

Research and Educational Grants

- 2002-2003 UEC Grant for the Promotion of Research and Education
University of Electro-Communications, Japan
Subject: Emergence and evolution of patterns in spatially distributed locally interacting populations
Amount: JPY 1,300,000
Role: PI
- 2003 Visiting Researcher Support (as a host institution for short-term visit of Chris Salzberg)
International Information Science Foundation, Japan
Subject: Visualization and analysis of graph-based evolutionary dynamics
Amount: JPY 300,000
- 2003-2004 Grant for Research on Human and Entertainment
Hayao Nakayama Foundation for Science, Technology and Culture, Japan
Subject: Basic study on the possibility of physical implementation of self-replicating toys
Amount: JPY 1,000,000
Role: PI
- 2003-2004 Grant for Environmental Research
Showa Shell Sekiyu Foundation for Promotion of Environmental Research, Japan
Subject: Theoretical models and simulations of the effects of artificial modification of habitat structure on biodiversity
Amount: JPY 500,000
Role: PI
- 2005-2007 Grants-in-Aid for Scientific Research
Ministry of Education, Culture, Sports, Science and Technology (MEXT) of Japan
Subject: Developing a kinematic model of self-replicating universal constructors
Amount: JPY 1,200,000
(Project canceled due to moving of PI)
Role: PI
- 2006-2007 Interdisciplinary Collaboration Grant
Division of Research, Binghamton University
Subject: Modeling judgment and decision making of collaborative teams working to satisfy variable requirements
Amount: \$8,000
Role: Co-PI (Collaboration with Shelley Dionne)
- 2006-2007 Mini-Grant for Short-Term Travel Support
Division of Research, Binghamton University
Amount: \$700
- 2007 Mini-Grant for Short-Term Travel Support

- Division of Research, Binghamton University
Amount: \$1,000
- 2008-2010 Course, Curriculum, and Laboratory Improvement
National Science Foundation (Award #: NSF DUE-0737313)
Subject: Teaching Social Complexity and Multidisciplinary Team Building: An Experimental Engineering Approach
Amount: \$149,955
Role: Co-PI (Collaboration with Craig Laramee, Shelley Dionne and David Sloan Wilson)
- 2008-2010 Conrad and Virginia Klee Foundation
Subject: Linking Youth and Community through Technology
Amount: \$71,500
Role: Co-PI (Collaboration with Pamela Mischen, Madhu Govindaraju and Kevin Heard)
- 2008-2012 Human and Social Dynamics
National Science Foundation (Award #: NSF SES-0826711)
Subject: Evolutionary Perspective on Collective Decision Making
Amount: \$552,074
Role: Main PI (Collaboration with Shelley Dionne, Craig Laramee, J. David Schaffer and Francis Yammarino)
- 2009 Mini-Grant for Short-Term Travel Support
Division of Research, Binghamton University
Amount: \$340
- 2010-2011 Interdisciplinary Collaboration Grant
Division of Research, Binghamton University
Subject: Modeling diffusion and adoption of innovation over space and time using automated model discovery techniques
Amount: \$10,000
Role: Main PI (Collaboration with Manoj Agarwal, Kenneth Chiu and Kevin Heard)
- 2010-2011 Interdisciplinary Collaboration Grant
Division of Research, Binghamton University
Subject: A system for individual-based modeling using graphics processing unit acceleration
Amount: \$10,000
Role: Co-PI (Collaboration with Kenneth Chiu and David Liu)
- 2010-2014 Cyber-enabled Discovery and Innovation Type-I
National Science Foundation (Award #: NSF BCS-1027752)
Subject: Modeling and Predicting State-Topology Coevolution of Complex Adaptive Networks
Amount: \$412,189
Role: Main PI (Collaboration with Thilo Gross)
- 2011 EvoS Small Grant
EvoS Program, Binghamton University
Subject: Emergence and Evolution of "Super-Organisms" in an Artificial Swarm via Transmission and Mutation of Behavioral Properties
Amount: \$720

Role: PI

- 2011-2012 Academic Programs and Faculty Development Fund
Office of the Provost, Binghamton University
Subject: New Interdisciplinary Graduate Concentration/Certificate Programs in Complex Systems Science and Engineering
Amount: \$10,000
Role: Main PI (Collaboration with six other Binghamton faculty members)
- 2011-2012 Academic Programs and Faculty Development Fund
Office of the Provost, Binghamton University
Subject: Automated Model Discovery: A New Mode of Scientific Inquiry for the Coming Century
Amount: \$10,000
Role: Co-PI (Collaboration with Kenneth Chiu and five other Binghamton faculty members)
- 2011-2012 Academic Programs and Faculty Development Fund
Office of the Provost, Binghamton University
Subject: Virtual Communities for Neighborhood Modeling and Computational Thinking
Amount: \$17,700
Role: Co-PI (Collaboration with Pam Mischen, Madhu Govindaraju and Kevin Heard)
- 2011-2012 Corporate Donation
BAE Systems
Subject: NetSci High 2012: The Second International High School Student Poster Competition on Network Science
Amount: \$2,325
Role: PI
- 2011 Mini-Grant for Short-Term Travel Support
Division of Research, Binghamton University
Amount: \$500
- 2012 Research & Development Contract
Defence Research & Development Canada -- Centre for Operational Research and Analysis
Subject: Generative Network Automata-Based Modeling and Analysis of Dynamical Operational Networks with Embedded Heterogeneous Agents
Amount: \$25,000
Role: PI
- 2012-2015 Innovative Technology Experiences for Students and Teachers (ITEST)
National Science Foundation (Award #: NSF DRL- 1139478)
Subject: Network Science for the Next Generation
Amount: \$24,000
Role: Individual consultant to the New York Hall of Science (Collaboration with Stephen Uzzo, H. Eugene Stanley and Paul Trunfio)
- 2012 Mini-Grant for Short-Term Travel Support
Division of Research, Binghamton University
Amount: \$1,000

- 2013-2017 Robust Intelligence
National Science Foundation (Award #: NSF IIS-1319152)
Subject: Robustness and Adaptation in Morphogenetic Collective Systems
Amount: \$374,811 (+ \$1,756 as supplemental funding)
Role: PI
- 2014-2015 Research Grant
Telecommunications Advancement Foundation, Japan
Subject: Studying online users' cooperative mechanisms using evolutionary games
Amount: JPY 1,110,000
Role: Co-PI (Collaboration with Genki Ichinose)
- 2014-2015 Interdisciplinary Collaboration Grant
Division of Research, Binghamton University
Subject: A machine learning-based approach for optimizing the discovery of brain-based risk markers for psychiatric illness
Amount: \$20,000
Role: Co-PI (Collaboration with Vladimir Miskovic, Brandon Gibb and Chun-An Chou)
- 2015 Conference Support Grant
US Army Research Office
Subject: CompleNet 2015: The Sixth International Workshop on Complex Networks
Amount: \$14,962
Role: PI
- 2015-2016 Interdisciplinary Collaboration Grant
Division of Research, Binghamton University
Subject: Using Network Analysis to Explore the Temporal Dynamics of Emotion in Schizophrenia
Amount: \$10,000
Role: Co-PI (Collaboration with Gregory Strauss)
- 2015-2016 Health Sciences Transdisciplinary Area of Excellence (TAE) Grant
Division of Research, Binghamton University
Subject: Predicting Conversion to Psychosis in At-Risk Youth: The Role of Stress-Inflammation Interactions
Amount: \$20,000
Role: Co-PI (Collaboration with Gregory Strauss, Terrence Deak and Gary James)
- 2015-2020 Organized Research Center Support
Division of Research, Binghamton University
Subject: Establishment of the Center for Collective Dynamics of Complex Systems
Amount: \$60,000
Role: Main PI (Collaboration with a number of CoCo faculty members)
- 2016-2017 Conference Support Grant
US Army Research Office
Subject: Workshop Support: Network Science and Education
Amount: \$20,000
Role: Main PI (Collaboration with Raluca Gera and Lori Sheetz)

- 2017-2019 Research Grant
US Army Research Institute for the Behavioral and Social Sciences
Subject: Collective Planning and Leadership for the U.S. Army
Amount: \$639,219 (Binghamton portion: \$395,322)
Role: Co-PI (Collaboration with Francis Yammarino, Michael Mumford, Shelley Dionne and Shane Connelly)
- 2017-2019 Research Grant
National Institute of Mental Health, National Institutes of Health
Subject: Modeling Anhedonia in Schizophrenia: A Stochastic Dynamical Systems Approach
Amount: \$417,456 (Binghamton portion: \$132,995)
Role: Co-PI (Collaboration with Gregory Strauss and Brett Clementz)
- 2017-2020 Science of Organizations
National Science Foundation (Award #: NSF SES-1734147)
Subject: Diversity, Network Structure, and the Effectiveness of Collective Design and Innovation
Amount: \$441,000
Role: Main PI (Collaboration with Shelley Dionne and Francis Yammarino)
- 2017-2018 Conference Grant
SUNY Conversations in the Disciplines program
Subject: First Northeast Regional Conference on Complex Systems
Amount: \$3,000
Role: Main PI (Collaboration with CoCo ORC faculty)
- 2017-2018 Data Science Transdisciplinary Area of Excellence (TAE) Working Group Seed Grant
Division of Research, Binghamton University
Subject: Adaptive Network Modeling of Real-World Temporal Social Networks
Amount: \$3,000
Role: Main PI (Collaboration with Qi Wang, Xingye Qiao and Zhongfei (Mark) Zhang)
- 2018 Conference Grant
National Science Foundation
Subject: NERCCS 2018: First Northeast Regional Conference on Complex Systems
Amount: \$4,836
Role: Main PI (Collaboration with Changqing Cheng and Shelley Dionne)
- 2018-2019 Research Grant
Waseda University Research Promotion Division
Subject: Can Diversity Help Us Connected? Adaptive Network Model of Rapid Social Evolution Under Intensified Interactions Among Constituents
Amount: JPY 500,000
Role: Main PI (Collaboration with Junichi Yamanoi)

Honors and Awards

- 1996 Best Presentation Award
Fujitsu Fifth Parallel Computing Workshop (PCW'95 Japan)

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- 1997-1999 First-Class Scholarship
Japan Scholarship Foundation
Amount: JPY 2,688,000
- 1999-2001 Overseas Scholarship
Murata Overseas Scholarship Foundation, Japan
Subject: Study on parallel computation models that utilize logical structures immanent in the complexity of cellular automata
Amount: JPY 3,350,000
- 2002 Travel Award for Researchers Dispatched to International Conventions
Ministry of Education, Culture, Sports, Science and Technology (MEXT) of Japan
Subject: Von Neumann's machine in the shell: Enhancing the robustness of self-replication processes (Presentation at the Eighth International Conference on Artificial Life, Sydney, Australia)
Amount: JPY 184,280
- 2007 Individual Development Award
Binghamton University / UUP
Amount: \$1,000
- 2008 Guest Scientist and Institute Colloquium Speaker
Max Planck Institute for the Physics of Complex Systems, Dresden, Germany
(Travel and local expenses fully covered by the Max Planck Institute)
- 2008 Invited Speaker
The 2007/2008 Dean's Distinguished Lecture Series
University of Vermont College of Engineering and Mathematical Sciences
- 2008 Individual Development Award
Binghamton University / UUP
Amount: \$1,000
- 2008-present Faculty Fellow
Center for Leadership Studies
Binghamton University, State University of New York
- 2009 Individual Development Award
Binghamton University / UUP
Amount: \$1,000
- 2010 Individual Development Award
Binghamton University / UUP
Amount: \$700
- 2010 Individual Development Award
Binghamton University / UUP
Amount: \$668
- 2010 Best Presentation Award
IPJS SIG-Mathematical Modeling and Problem Solving Meeting #81

- Fukuoka, Japan
- 2010 Keynote Speaker
The 2010 Japanese Society for Evolutionary Computation Symposium
Fukuoka, Japan
- 2011 Invited Speaker
Table ronde à la Cité des sciences: “Les machines peuvent-elles imiter le cerveau humain?”
Cité des Sciences et de l'Industrie
Paris, France
- 2011 Guest Scientist
Max Planck Institute for the Physics of Complex Systems, Dresden, Germany
- 2011 Best Poster Award
Eleventh European Conference on Artificial Life (ECAL 11)
Held in Paris, France
- 2012-2015 Research Fellow
Center for Applied Community Research and Development (CACRD)
Binghamton University
- 2014-2015 Individual Development Award
Binghamton University / UUP
Amount: \$1,000
- 2015 Best Contributed Talk
NetSci 2015 Satellite Symposium on Controlling Complex Networks
Held in Zaragoza, Spain
- 2015 Guest Scientist
Max Planck Institute for the Physics of Complex Systems, Dresden, Germany
- 2016 Individual Development Award
Binghamton University / UUP
Amount: \$910.60
- 2016 Chancellor's Award for Excellence in Teaching
State University of New York
Amount: \$1,000
- 2016 Lois B. DeFleur Faculty Prize for Academic Achievement
Binghamton University
Amount: \$10,000
- 2016 ISAL Exceptional Service Award
International Society for Artificial Life
- 2016 Invited Speaker
Thirteenth NetEco Symposium
Kisarazu, Japan

- 2016-2017 Guest Scientist
Max Planck Institute for the Physics of Complex Systems, Dresden, Germany
- 2017 Individual Development Award
Binghamton University / UUP
Amount: \$1,000
- 2017 First Place, “Imagining Science” category
The Art of Science competition
(Work title: “Visualized for the Blind”)
Binghamton University
- 2017 Best Poster Award (lead student author: Benjamin James Bush)
The 2017 International School and Conference on Network Science (NetSci 2017)
Held in Indianapolis, IN
- 2018 ISAL Outstanding Paper of the Decade (2003-2013) Award
(Swarm Chemistry, Artificial Life 15(1), 105-114, 2009)
International Society for Artificial Life

Academic Memberships

ISAL (International Society for Artificial Life)
CSS (Complex Systems Society) & CSS US Northeast Chapter
NetSci (Network Science Society)
IEEE (Institute of Electrical and Electronics Engineers)
IEEE Computational Intelligence Society
IEEE Systems, Man, & Cybernetics Society
AAAS (American Association for the Advancement of Science)

Teaching

- 1999 -2002 Teaching Assistant at several NECSI Courses and Advanced Training Programs
New England Complex Systems Institute
- 2002-2005 Course development and instruction for undergraduate and graduate programs
Department of Human Communication, UEC
- Algorithms and Data Structures (for sophomores)
 - Graphs and Dynamical Networks (for sophomores and international students in English)
 - Introduction to Computer Science (for sophomores and juniors)
 - Introduction to Information Theory (for juniors)
 - Mathematical Modeling and Simulation (for juniors)
 - Advanced Lectures on Emergent Communication Systems Design (for graduates and international students in English)

 - Other courses co-taught with other faculty
 Introductory Seminar on Human Communication (for freshmen)

Topics on Modern Science and Technology (for sophomores)
 Academic Reading in English (for juniors)
 Fundamentals of Media Communication (for graduates)

Senior thesis project supervision for nineteen undergraduate students
 Department of Human Communication, UEC

Master thesis project supervision for three graduate students
 Department of Human Communication, UEC

Master thesis project remote supervision for two graduate students
 Section Computational Science, University of Amsterdam, the Netherlands

Research supervision for one visiting researcher
 Department of Human Communication, UEC

- 2003-2005 Part-time Lecturer
 Intensive Course on Complex Systems Science II: Invitation to Self-Replication Studies
 Department of Complex Systems Science
 Graduate School of Information Science, Nagoya University, Japan
- 2003 Program Coordinator
 An Intersection between Machines and Life -- Creating Artificial Systems That Exhibit Lifelike Behavior
 UEC Open Lecture Series, UEC, Japan
- 2006-present Course development and instruction for undergraduate and graduate programs
 Departments of Bioengineering/Systems Science and Industrial Engineering, Binghamton University, SUNY, USA
- BE-201/BIOL-333: Self-Organizing Systems (for sophomores)
 - BE-410/BME-515: Complexity in Biological Systems (for seniors and graduates)
 - BE-461: Exploring Social Dynamics (for juniors and seniors)
 - BME-510: Modeling Complex Biological Systems (for graduates)
 - BME-523: Dynamics of Complex Networks (for graduates)
 - SSIE/BME-524: Graduate Seminar in Complex Systems Science (for graduates)
 - SSIE-523: Collective Dynamics of Complex Systems (for graduates)
 - SSIE-500: Computational Tools (for graduates)
 - SSIE-641: Advanced Topics in Network Science (for advanced graduates)
- PhD/Master thesis project supervision for a number of graduate students
 Departments of Bioengineering & Systems Science and Industrial Engineering,
 Binghamton University, SUNY, USA
- 2008-present Instructor
 New England Complex Systems Institute Summer/Winter Schools
 Cambridge, MA
- CX-201: Complex Physical, Biological and Social Systems (2009-)
 - CX-102: Complex Systems and Computer Programming (2010-)
 - CX-202: Complex Systems Modeling and Networks (2008-)

- CX-203: Methods for the Study of Complex Systems (2008-2009)
 - Introduction to Nonlinear Dynamics and Spatial Pattern Formation (2014)
- 2008 Invited Lecturer
Second Annual French Complex Systems Summer School
Complex Systems Institute Paris Ile-de-France (ISC-PIF), Paris, France
- Continuous space, lattices and swarms: Pattern formation in complex systems
- 2010-2015 Co-Organizer and Research Supervisor
NetSci High: High School Student Research on Network Science
- Collaboration with Stephen Uzzo, Tara Chudoba and Catherine Cramer (New York Hall of Science), H. Eugene Stanley and Paul Trunfio (Boston University), Lori Sheetz (USMA West Point)
 - Supervision of student projects at Maine-Endwell High School, Endwell, NY, and Vestal High School, Vestal, NY
 - Introductory lectures and labs on network modeling and analysis for high school students and teachers at NetSci High Summer Camp
- 2011 Invited Lecturer
First NWO (Netherlands Organization for Scientific Research) Complexity Winter School
Zandvoort, the Netherlands
- Introduction to complex systems, nonlinear dynamics and chaos
 - Complex systems modeling and simulation in Python
- 2015-2017 Organizer and Research Supervisor
Computational Understanding of Living Systems (COULS) Program
- Supervision of student projects at Vestal High School, Vestal, NY
- 2016 Invited Lecturer
Intensive Course of Network and Agent-Based Modeling
Waseda University, Tokyo, Japan
- 2017-2019 Course development and instruction for undergraduate, graduate and international programs
School of Commerce, Waseda University, Tokyo, Japan
- Computational Approaches to Complex Systems and Networks with Python
- 2018 Invited Lecturer
Self-Organizing Artifacts: Artificial Chemistry, Artificial Life, and Morphogenetic
Engineering
University of Tokyo, Japan
- 2018 Course Designer and Lecturer
DAT 1802: Introduction to Python Programming (one-day continuing education course)
Watson Office of Industrial Outreach
Thomas J. Watson School of Engineering and Applied Science
Binghamton University

Academic Services

- 1998-2005 Seminar Series Organizer
Artificial Life Independent Seminar in Tokyo / Ad-hoc Learning Initiative on Systems and Theories (ALIST)
- 1999 Meeting Organizer
“What’s Been Done, What’s Not Yet, and What Comes Next in Artificial Life”
ALIREN + ALIST Joint Meeting
Held at University of Tokyo, Japan
- 1999-present Board Member
ALIREN, Japan
- 2000 Meeting Co-Organizer
The 20th SIG Meeting on System Engineering: New Trends in Artificial Life
Society of Instrument and Control Engineers
Held at Nagoya University, Japan
- 2001 Reviewer
ECAL 2001: The Sixth European Conference on Artificial Life
Held in Prague, Czech Republic
- 2002-present Affiliate
New England Complex Systems Institute
- 2002-2003 Guest Editor (with Dan Braha, Mark Klein, and Yaneer Bar-Yam)
Concurrent Engineering: Research and Application (CERA) Journal Special Issue:
“A Complex Systems Perspective on Concurrent Engineering”
- 2003 Program Committee Member
The 2003 Annual Conference of the Japanese Cognitive Science Society
Held at UEC, Japan
- 2004 Program Committee Member
ICCS 2004: The Fifth International Conference on Complex Systems
Held in Boston, MA
- 2004 Meeting Organizer
“Emergent Evolution in Artificial Life”
A workshop in the Sixth Annual Meeting of the Society of Evolutionary Studies, Japan
Held at University of Tokyo, Japan
- 2004 Program Committee Member
ALIFE IX: The Ninth International Conference on the Simulation and Synthesis of Living Systems
Held in Boston, MA
- 2004 Program Committee Member
ACA 2004: A Workshop on Artificial Chemistry and Its Applications

- Part of ALIFE IX: The Ninth International Conference on the Simulation and Synthesis of Living Systems
Held in Boston, MA
- 2005 Program Committee Member
Special Session on Artificial Life in the 2005 IEEE Congress on Evolutionary Computation (CEC 2005)
Held in Edinburgh, UK
- 2005 Program Committee Member
ACA 2005: A Workshop on Artificial Chemistry and Its Applications
Part of ECAL 2005: The Eighth European Conference on Artificial Life
Held in Kent, UK
- 2006 Program Committee Member
Workshop on Artificial Chemistries and Artificial Life
Part of AISB'06: Adaptation in Artificial and Biological Systems
Planned to be held in Bristol, UK (cancelled)
- 2006 Scientific Committee Member
Workshop on Machine Self-Replication
Part of ALIFE X: The Tenth International Conference on the Simulation and Synthesis of Living Systems
Held in Bloomington, IN
- 2006 Program Committee Member
GECCO 2006: The 2006 Genetic and Evolutionary Computation Conference (Artificial Life, Evolutionary Robotics, Adaptive Behavior Track)
Held in Seattle, WA
- 2006 Program Committee Member
ICCS 2006: The Sixth International Conference on Complex Systems
Held in Boston, MA
- 2006-present Technical Committee Member
Technical Committee on Complex System Empowered Biological Networking
IEICE Communications Society, Japan
- 2006-2007 Reviewer
The First IEEE Symposium on Artificial Life (IEEE ALIFE '07)
Held in Honolulu, HI
- 2007 Reviewer
The 2007 IEEE Congress on Evolutionary Computation (CEC 2007)
Held in Singapore
- 2007 Co-chair
Workshop on Machine Epigenesis
Part of ECAL 2007: The Ninth European Conference on Artificial Life
Planned to be held in Lisbon, Portugal (cancelled)

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- 2007 Special Sessions Chair and Executive Committee Member
ICCS 2007: The Seventh International Conference on Complex Systems
Held in Boston, MA
- 2007 Program Committee Member
The Second International Workshop on Natural Computing
Held in Nagoya, Japan
- 2007-present Scientific Advisory Board Member
Lifeboat Foundation
- 2008 Program Committee Member
ALIFE XI: The Eleventh International Conference on the Simulation and Synthesis of Living
Systems
Held in Winchester, UK
- 2008 Technical Committee Member
The 2008 IEEE Congress on Evolutionary Computation (CEC 2008)
Part of WCCI 2008: The 2008 IEEE World Congress on Computational Intelligence
Held in Hong Kong, China
- 2008 Reviewer
The 18th International Conference on Artificial Neural Networks in Engineering (ANNIE
2008)
Held in St. Louis, MO
- 2008 Program Committee Member
The Third International Workshop on Natural Computing
Held in Yokohama, Japan
- 2008-2009 Co-Editor (with Thilo Gross)
Adaptive Networks: Theory, Models and Applications
Springer/NECSI Studies on Complexity Series
Published in 2009
- 2008-2009 Program Committee Member
The Second IEEE Symposium on Artificial Life (IEEE ALIFE '09)
Held in Nashville, TN
- 2008-2012 Editor
IPSI Transactions on Mathematical Modeling and Its Applications
- 2008-present Academic Editorial Board Member
Journal of the Evolutionary Studies Consortium (EvoS Journal)
- 2009 Program Committee Member
The 2009 IEEE Congress on Evolutionary Computation (CEC 2009)
Held in Trondheim, Norway
- 2009 Co-Organizer
The First International Workshop on Morphogenetic Engineering (MEW 2009)

- Held in Paris, France
- 2009 Program Committee Member
The Fourth International Workshop on Natural Computing
Held in Himeji, Japan
- 2009 Program Committee Member
International Workshop on Complex Collective Systems
Part of the Eighth International Conference on Parallel Processing and Applied Mathematics (PPAM 2009)
Held in Wroclaw, Poland
- 2009-2012 Co-Editor (with Rene Doursat and Olivier Michel)
Morphogenetic Engineering: Toward Programmable Complex Systems
Springer/NECSI Studies on Complexity Series
Published in December 2012
- 2009-2010 Special Sessions Chair
Special Session on Morphogenetic Engineering
Part of ANTS 2010: Seventh International Conference on Swarm Intelligence
Held in Brussels, Belgium
- 2009-present Occasional Proposal Reviewer
National Science Foundation
- 2010 Evaluation Committee Member
Evolutionary Art Competition
GECCO 2010: The 2010 Genetic and Evolutionary Computation Conference
Held in Portland, OR
- 2010 Reviewer/Program Committee Member
The 2010 IEEE Congress on Evolutionary Computation (CEC 2010) and
Special Session on Bio-Inspired Self-Organizing Multi-Agent Systems
Part of WCCI 2010: The 2010 IEEE World Congress on Computational Intelligence
Held in Barcelona, Spain
- 2010 Program Committee Member
ALIFE XII: The 12th International Conference on the Synthesis and Simulation of Living
Systems
Held in Odense, Denmark
- 2010 Program Committee Member/Special Track Chair
The Fifth International Conference on Bio-Inspired Models of Network, Information and
Computing Systems (BIONETICS 2010) and
Special Track on State-Topology Coevolution in Adaptive Networks (STCAN 2010)
Special Track on Bioinformatics
Held in Boston, MA
- 2010-2011 Technical Program Committee Member
International Workshop on Self-Organizing Systems (IWSOS)
Held in Karlsruhe, Germany

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- 2010-2011 Co-Chair
The Third IEEE Symposium on Artificial Life (IEEE ALIFE 2011)
Held in Paris, France
- 2010-2011 Co-Organizer (with Stephen Uzzo and Tara Chudoba)
NetSci-High: International High School Student Poster Competition on Network Science
Part of NetSci 2011: International School and Conference on Network Science
Held in Budapest, Hungary
- 2010-2011 Program Chair
ICCS 2011: The Eighth International Conference on Complex Systems
Held in Boston, MA
- 2010-2011 Program Committee Member
The Fifth Australian Conference on Artificial Life (ACAL 2011)
Held in Perth, Australia
- 2010-2011 Program Committee Member
Second International Workshop on Complex Collective Systems
Part of the Ninth International Conference on Parallel Processing and Applied Mathematics
(PPAM 2011)
Held in Torun, Poland
- 2011 Program Committee Member
Tutorial Organizer, Artificial Chemical Computing Systems
Workshop Organizer, 3rd Morphogenetic Engineering Workshop
Eleventh European Conference on Artificial Life (ECAL 11)
Held in Paris, France
- 2011 Program Committee Member
Fifth IEEE International Conference on Self-Adaptive and Self-Organizing Systems (SASO
2011)
Held in Ann Arbor, MI
- 2011-present Proposal Review Panel Member
National Science Foundation
- 2011 Program Committee Member
International Conference on Advanced Computer Science and Information Systems 2011
(ICACSIS 2011)
Held in Jakarta, Indonesia
- 2011-2015 Elected Member, Board of Directors
International Society for Artificial Life (ISAL)
- 2011-2012 Technical Program Committee Member
Sixth International Workshop on Self-Organizing Systems (IWSOS 2012)
Held in Delft, the Netherlands
- 2012 Program Committee Member

- GECCO 2012: The 2012 Genetic and Evolutionary Computation Conference
(Generative and Developmental Systems Track)
Held in Philadelphia, PA
- 2012 Program Committee Member
Sixth IEEE International Conference on Self-Adaptive and Self-Organizing Systems (SASO 2012)
Held in Lyon, France
- 2012 Co-Organizer
NetSciEd: Satellite Symposium on Education “Infuse Network Science into K-12 and Undergraduate Education”
Part of the 2012 International School and Conference on Network Science
Held in Evanston, IL
- 2012 Program Committee Member
Thirteenth International Conference on the Simulation and Synthesis of Living Systems (ALIFE 13)
Held in East Lansing, MI
- 2012-present Vice Chair
IEEE CIS Artificial Life and Complex Adaptive Systems Task Force
- 2012-2013 Co-Chair
The Fourth IEEE Symposium on Artificial Life (IEEE ALIFE 2013)
Held in Singapore
- 2012-present Assistant Editor
Complex Adaptive Systems Modeling (SpringerOpen)
- 2012-present Review Editor
Frontiers in Computational Physics
- 2012-2014 External Consultant
Science and Technology Foresight Center
National Institute of Science and Technology Policy
Ministry of Education, Culture, Sports, Science and Technology (MEXT), Japan
- 2012-2013 Technical Program Committee Member
Seventh International Workshop on Self-Organizing Systems (IWSOS 2013)
Held in Palma de Mallorca, Spain
- 2012-2013 Program Committee Member
The Seventh International Workshop on Natural Computing
Held in Tokyo, Japan
- 2013 Co-Chair
NetSci 2013 Satellite Symposium on State-Topology Coevolution in Adaptive Networks (STCAN 2013)
Part of the 2013 International School and Conference on Network Science (NetSci 2013)
Held in Copenhagen, Denmark

- 2013 Co-Organizer
Second Network Science In Education Satellite Symposium (NetSciEd2)
Part of the 2013 International School and Conference on Network Science (NetSci 2013)
Held in Copenhagen, Denmark
- 2013 Program Committee Member
GECCO 2013: The 2013 Genetic and Evolutionary Computation Conference
(Generative and Developmental Systems Track)
Held in Amsterdam, The Netherlands
- 2013 Program Committee Member
Third International Workshop on Complex Collective Systems
Part of the Tenth International Conference on Parallel Processing and Applied Mathematics
(PPAM 2013)
Held in Warsaw, Poland
- 2013 Technical Program Committee Member
The 2013 IEEE Congress on Evolutionary Computation (IEEE CEC 2013)
Program Committee Member
CEC 2013 Special Session on Design, Programming and Learning of Complex Systems
Held in Cancun, Mexico
- 2013 Program Committee Member
Twelfth European Conference on Artificial Life (ECAL 2013)
Held in Taormina, Italy
- 2014 Co-Organizer
Third Network Science In Education Satellite Symposium (NetSciEd3)
Part of the 2014 International School and Conference on Network Science (NetSci 2014)
Held in Berkeley, CA
- 2013-2014 Program Chair
Fourteenth International Conference on the Synthesis and Simulation of Living Systems
(ALIFE 14)
Held in New York, NY
- 2014 Co-Chair
Fourth International Morphogenetic Engineering Workshop (MEW 2014)
Part of the Fourteenth International Conference on the Synthesis and Simulation of Living
Systems (ALIFE 14)
Held in New York, NY
- 2014 Program Committee Vice Chair
Eighth International Conference on Bio-inspired Information and Communications
Technologies
Held in Boston, MA
- 2014 Program Committee Member
Workshop on Massive Data Flow: Understanding the Complex Dynamics of the Web
Part of the ACM Web Science Conference 2014 (WebSci14)

- Held in Bloomington, IN
- 2014 Program Committee Member
Quantifying Success 2.0 Workshop
Part of the 2014 European Conference on Complex Systems (ECCS '14)
Held in Lucca, Italy
- 2014 Scientific Committee Member
Emergence in Chemical Systems 4.0 Conference
Held in Anchorage, AK
- 2014-2015 Review Editor
Frontiers in Robotics and AI / Computational Intelligence
- 2014-2015 Co-Organizer
Fourth Network Science In Education Satellite Symposium (NetSciEd4)
Part of the 2015 International School and Conference on Network Science (NetSci 2015)
Held in Zaragoza, Spain
- 2014-2015 Program Committee Member
Co-Chair, Special Session on Morphogenetic Engineering
ECAL 2015: The 2015 European Conference on Artificial Life
Held in York, UK
- 2014-2016 Guest Editor
Artificial Life
The Artificial Life 14 Conference Special Issue
- 2015 Reviewer
The 2015 IEEE Congress on Evolutionary Computation (IEEE CEC 2015)
Held in Sendai, Japan
- 2015 Program Committee Member
Fourth International Workshop on Complex Collective Systems
Part of the Eleventh International Conference on Parallel Processing and Applied Mathematics (PPAM 2015)
Held in Krakow, Poland
- 2015 Co-Chair
The Fifth IEEE Symposium on Artificial Life (IEEE ALIFE 2015)
Held in Cape Town, South Africa
- 2015-present Committee Member
IEEE CIS Task Force on Bio-Inspired Self-Organizing Collective Systems
- 2015-present Editorial Board Member
Applied Network Science (SpringerOpen)
- 2015-present Editorial Board Member
International Journal of Parallel, Emergent and Distributed Systems (Taylor & Francis)

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- 2015-present Editorial Board Member
Complex & Intelligent Systems (SpringerOpen)
- 2015-2016 Reviewer
The 2016 IEEE Congress on Evolutionary Computation (IEEE CEC 2016)
Held in Vancouver, Canada
- 2015-2016 Co-Organizer
Co-Chair, Workshop on Morphogenetic Engineering
Program Committee Member, Workshop on Guided Self-Organization
Fifteenth International Conference on the Synthesis and Simulation of Living Systems
(ALIFE XV)
Held in Cancun, Mexico
- 2015-present Elected Council Member
Complex Systems Society (CSS)
- 2016 Program Committee Member
CCS'16: The 2016 Conference on Complex Systems
Held in Amsterdam, the Netherlands
- 2016 Co-Organizer
Fifth NetSci Satellite Symposium on Network Science and Education (NetSciEd5)
Part of the 2016 International School and Conference on Network Science (NetSci 2016)
Held in Seoul, Korea
- 2016 Program Committee Member
First International Workshop on Self-Organising Construction
Part of the 10th IEEE International Conference on Self-Adaptive and Self-Organizing Systems
(SASO 2016)
Held in Augsburg, Germany
- 2016-present Associate Editor
Artificial Life (MIT Press)
- 2016 Program Committee Member
Fifth International Workshop on Complex Networks and Their Applications
Held in Milan, Italy
- 2016-2019 Elected Executive Committee Member
Complex Systems Society (CSS)
- 2017 Co-Organizer
Sixth NetSci Satellite Symposium on Network Science and Education (NetSciEd6)
Part of the 2017 International School and Conference on Network Science (NetSci 2017)
Held in Indianapolis, IN
- 2017 Program Committee Member
ECAL 2017: The 2017 European Conference on Artificial Life
Held in Lyon, France

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- 2017 Co-Chair, Workshop on Morphogenetic Engineering
ECAL 2017: The 2017 European Conference on Artificial Life
Held in Lyon, France
- 2017 Program Committee Member
CCS'17: The 2017 Conference on Complex Systems
Held in Cancun, Mexico
- 2017 Co-Chair
Second CCS Satellite Symposium on Complex Systems and Education
Part of CCS'17: The 2017 Conference on Complex Systems
Held in Cancun, Mexico
- 2017 Program Committee Member
Sixth International Workshop on Complex Networks and Their Applications
Held in Lyon, France
- 2017 Program Committee Member
Fifth International Workshop on Complex Collective Systems
Part of the Twelfth International Conference on Parallel Processing and Applied Mathematics
(PPAM 2017)
Held in Lublin, Poland
- 2017 Co-Chair
Sixth IEEE Symposium on Artificial Life (IEEE ALIFE 2017)
Held in Honolulu, HI
- 2017-2018 General Chair
First Northeast Regional Conference on Complex Systems (NERCCS 2018)
Held in Binghamton, NY
- 2017-2018 Organizing Committee Member
The 2018 International Conference on Artificial Life (ALIFE 2018)
Held in Tokyo, Japan
- 2017-present Editorial Board Member
Complexity (Hindawi)
- 2017-present Editorial Board Member
Complex Systems (Complex Systems Publications)
- 2018 Co-Organizer
NetSciEd 2018: NetSci Satellite Symposium on Network Science and Education
Part of the 2018 International School and Conference on Network Science (NetSci 2018)
Held in Paris, France
- 2018 Co-Organizer
Special session on Bridging Network Science and Graph Theory
Part of the 2018 SIAM Conference on Applied Mathematics Education (ED18)
Held in Portland, OR

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- 2018 Program Committee Member
Co-Organizer, Complex Systems: Literacy and Learning Workshop
ICCS 2018: The Ninth International Conference on Complex Systems
Held in Cambridge, MA
- 2018 Program Committee Member
Second International Workshop on Self-Organising Construction
Part of the 12th IEEE International Conference on Self-Adaptive and Self-Organizing Systems (SASO 2018)
Held in Treno, Italy
- 2018 Program Committee Member
CCS'18: The 2018 Conference on Complex Systems
Held in Thessaloniki, Greece
- 2018-2019 Program Committee Member
CompleNet 2019: Tenth International Conference on Complex Networks
Held in Tarragona, Spain
- 2018-2019 General Chair
Second Northeast Regional Conference on Complex Systems (NERCCS 2019)
Held in Binghamton, NY
- 2018-present Founding Member
US Northeast Chapter of the Complex Systems Society
- 2018-2021 CCS Steering Committee Member
Complex Systems Society (CSS)
- 2019 Organizer
NetSciEd 2019: NetSci Satellite Symposium on Network Science and Education
Part of the 2019 International School and Conference on Network Science (NetSci 2019)
Held in Burlington, VT
- 2019 Program Committee Member
The 2019 Conference on Artificial Life (ALIFE 2019)
Held in Newcastle upon Tyne, UK
- 2019 Program Committee Member
Third International Workshop on Self-Organising Construction
Part of the 13th IEEE International Conference on Self-Adaptive and Self-Organizing Systems (SASO 2019)
Held in Umeå, Sweden
- 2019 Guest Editor, Special Issue on Leadership in the Digital Era: Social Media, Big Data, Virtual Reality, Computational Methods, and Deep Learning
Leadership Quarterly
- 2019 General Chair
Seventh IEEE Symposium on Artificial Life (IEEE ALIFE 2019)
Held in Xiamen, China

Also serving as a reviewer for a number of scientific journals and conferences.

Services for Institutes and Departments

1999-2002	System Administrator New England Complex Systems Institute
2002-2005	Special Admission Committee Member Faculty of Electro-Communications, UEC
2002-2005	Department Webpage Committee Member Department of Human Communication, UEC
2003-2004	Curriculum Development Working Group Member Department of Human Communication, UEC
2003-2005	General Admission Committee Member Faculty of Electro-Communications, UEC
2003-2005	Student Advisor Department of Human Communication, UEC
2004-2005	University Planning and Examining Committee Member UEC
2005	Master/Senior Thesis Projects Coordinator Department of Human Communication, UEC
2005	Information Processing Center Steering Committee Member UEC
2005	Faculty Reform Planning Working Group Member Faculty of Electro-Communications, UEC
2006-2010	Publications Committee Member Thomas J. Watson School of Engineering and Applied Science, Binghamton University
2006-2011	Undergraduate Program Committee Member Department of Bioengineering, Binghamton University
2006-2012	Research Committee Member Thomas J. Watson School of Engineering and Applied Science, Binghamton University
2007-2013	Department Webmaster Department of Bioengineering, Binghamton University
2007-2015	Director Collective Dynamics of Complex Systems (CoCo) Research Group Binghamton University

- 2007-present Executive Committee Member
Evolutionary Studies Program (EvoS), Binghamton University
- 2007-2015 Advisory Board Member
Center for Applied Community Research and Development (CACRD)
Binghamton University
- 2011-2012 Graduate Program Committee Member
Department of Bioengineering, Binghamton University
- 2012-2013 Graduate Program Director
Department of Bioengineering, Binghamton University
- 2013-present Founder and Program Director
Advanced Graduate Certificate Program in Complex Systems Science and Engineering
Binghamton University
- 2013-2015 Advisory Committee Member
Advisory Committee on Scholarship and Research, Binghamton University
- 2013 Chair, Graduate Studies Committee
Thomas J. Watson School of Engineering and Applied Science, Binghamton University
- 2014-present Affiliated Faculty Member
Center for Affective Science, Binghamton University
- 2015-present Graduate Program Director and Watson Graduate Studies Committee Member
Graduate Programs in Systems Science, Binghamton University
- 2015-present Director
Center for Collective Dynamics of Complex Systems (CoCo), Binghamton University
- 2015-2017 Faculty Senate
Binghamton University
- 2015-present Multilingual Faculty Volunteer Translator
Translation and Interpretation Program
Multicultural Resource Center, Binghamton University
- 2015-2016 Ad-Hoc Committee on Teaching Quality Enhancement
Thomas J. Watson School of Engineering and Applied Science, Binghamton University
- 2016-present Steering Committee Member
Sustainable Communities Transdisciplinary Areas of Excellence (TAE)
Binghamton University
- 2017-present Calculus Advisory Committee
Binghamton University
- 2017-2018 Data Science Initiative Special Committee

Binghamton University

2018-present Steering Committee Member
Data Science Transdisciplinary Areas of Excellence (TAE)
Binghamton University

2018-present Faculty Advisor
Girls Who Code
Binghamton University

Other Skills

Languages

Programming languages: Python, Mathematica, Java, C/C++, MATLAB, R, NetLogo, JavaScript, Lisp, etc.
Fluent in written and spoken English/Japanese