CURRICULUM VITAE

Risto Miikkulainen

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Education

Doctor of Philosophy in Computer Science, University of California, Los Angeles, 1990.

Master of Science in Engineering (Applied Mathematics), "with distinction", Helsinki University of Technology, Finland, 1986.

Academic Positions

Professor, Department of Computer Sciences, University of Texas at Austin, since 2002; Associate Professor, 1996 – 2002; Assistant Professor, 1990 – 1996.

Faculty Member, Institute for Neuroscience, The University of Texas at Austin, since 2000.

Professional Positions

VP of AI Research, Cognizant AI Lab, since 2024; Associate VP of Evolutionary AI, 2018–2023.

Consultant, Medix Biotechnologies, since 2024.

Consultant, Rize Education, 2024-2025.

Advisory Board, SmartiPaaS Inc., 2023.

Technical Lead, XPRIZE Pandemic Response Challenge, 2020-2021.

CTO, Sentient Technologies, 2018; VP of Research, 2017; Fellow, 2015-2017 (acquired).

Consultant, Centaur Technology, Inc., Austin, 2015-2017.

Co-founder, Digital Certainty, Inc., Austin, 2011-2016 (acquired).

Consultant, 21st Century Technologies, Inc., Austin, 2008-2010.

Advisory Board, Lange Fund Management, LLC, Los Angeles, 2005-2006.

Consultant, Catalis Healthcare / Recare Inc., Austin, 2000-2006.

Research Summary

My research focuses on biologically-inspired computation such as neural networks and evolutionary computation. On one hand, the goal is to understand biological information processing, and on the other, to develop intelligent artificial systems that learn and adapt by observing and interacting with the environment. The three main focus areas are: (1) Decision AI, in particular methods of neuroevolution, generative AI, and deep learning, (2) Cognitive Science, i.e. models of natural language processing, memory, and learning that, in particular, shed light on disorders such as schizophrenia and aphasia; and (3) Computational Neuroscience, i.e. development, structure, and function of the visual cortex, episodic memory, and language processing.

Editorial and Academic Leadership Positions

IEEE CIS Evolutionary Computation Pioneer Award committee, 2020, 2022, 2023 (Member); 2021 (Chair).

IEEE CIS Fellows Committee, 2019, 2020.

Board of Governors, International Neural Network Society, 2007–2016 (elected position).

Computational Intelligence in Games Technical Committee, IEEE Computational Intelligence Society, Vice Chair 2007-2011, Member, 2007–2016.

Scientific Advisory Board, Center of Excellence in Adaptive Informatics Research, Helsinki University of Technology, 2006–2011.

ACM Transactions on Evolutionary Learning and Optimization, Advisory Board, since 2019.

Springer Natural Computing Book Series, Advisory Board, since 2018.

Scholarpedia, curator, 2015–2020.

IEEE Transactions on Computational Intelligence and AI in Games, associate editor, 2008–2017.

Cognitive Systems Research, associate editor, 2000-2015.

IEEE Transactions on Autonomous Mental Development, associate editor, 2008–2014.

Neural Networks, associate editor, 2008–2011.

Machine Learning, action editor, 2002–2011.

Transactions of AI and NextGen, editorial board member, since 2025.

aigamereserch.org, editorial board member, 2013–2020.

Machine Learning, editorial board member, 2011–2020.

Evolutionary Intelligence, editorial board member, 2007–2020

Encyclopedia of Machine Learning, editorial board member, 2005–2011 (1st Edition); 2014–2017 (2nd Edition); 2020–2023 (3rd Edition).

Neural Computing Surveys, editorial board member, 1996–2001.

Applied Intelligence, editorial board member, 1995–2005.

Neural Processing Letters, editorial board member, 1994–2005.

IEEE Transactions on Computational Intelligence and AI in Games, Guest co-editor of a special issue on "Physics-Based Simulation Games," 2016.

Neural Networks, Guest co-editor of a special issue on "Advances on Self-Organizing Maps," 2005.

IEEE Transactions on Evolutionary Computation, Guest co-editor of a special issue on "Evolutionary Computation and Games," 2005.

Awards and Honors

Best-Paper Award, Chen Institute Symposium for AI Accelerated Science (AIAS2025), to Miikkulainen, R. and Kiran, S. "Gaining Insight into Brain Damage and Rehabilitation through Digital Twins."

Gold Award, Human Competitive Results Competition, *Genetic and Evolutionary Computation Conference* (GECCO-2025, Malaga, Spain), for Meyerson, E., Francon, O., Sargent, D., Hodjat, B., and Miikkulainen, R. (2024), "Unlocking the Potential of Global Human Expertise.

Second Place, AI for Drinking Water Chlorination Challenge at IJCAI 2025, "Leveraging Evolutionary Surrogate-Assisted Prescription in Multi-Objective Chlorination Control Systems", by Rivaaj Monsia, Risto Miikkulainen, Olivier Francon, and Daniel Young, 2025.

Best-Paper Award, *Neural Networks* 2022, for "Discovering parametric activation functions" by Garrett Bingham and Risto Miikkulainen, 2024.

College of Fellows, International Neural Network Society, since 2024.

Best-Paper Award Honorable Mention, *International Conference on Development and Learning* (ICDL-2024, Austin TX) to Warner, J., Devaraj, A., and Miikkulainen, R.. "Using context to adapt to sensor drift."

AIIA Fellow, since 2024.

"Best Pathway to Impact Award", *NeurIPS 2023 Workshop* on "Tackling Climate Change with Machine Learning", to Miikkulainen, R., Francon, O., Young, D., Meyerson, E., Bieker, J., Cunha, H., and Hodjat, B. for "Discovering Effective Policies for Land-Use Planning."

AAAI Fellow, since 2023.

AAIA Fellow, since 2023.

Best-Paper Award in the GA track, *Genetic and Evolutionary Computation Conference* (GECCO-2022, Boston, MA) to Meyerson, E., Qiu, X., and Miikkulainen, R. for "Simple Genetic Operators are Universal Approximators of Probability Distributions (and other Advantages of Expressive Encodings)."

Silver Award, Human Competitive Results Competition, *Genetic and Evolutionary Computation Conference* (GECCO-2022, Boston, MA), for Miikkulainen, R., Meyerson, E., Qiu, X., Sinha, U., Kumar, R., Hofmann, K., Yan, Y. M., Ye, M., Yang, J., Caiazza, D., Manson Brown, S. (2021), "Evaluating Medical Aesthetics Treatments through Evolved Age-Estimation Models."

Evolutionary Computation Pioneer Award, IEEE Computational Intelligence Society, 2020.

Best-Paper Award at the *IEEE Congress on Evolutionary Computation* (CEC-2020, Glasgow, Scotland; online) to Rajagopalan, P., Holekamp, K. E. and Miikkulainen, R. for "Evolution of Complex Coordinated Behavior."

Best-Paper Award in the GECH track, *Genetic and Evolutionary Computation Conference* (GECCO-2020, Cancun, Mexico; online) to Francon, O., Gonzalez, S., Hodjat, B., Meyerson, E., Miikkulainen, R., Qiu, X., and Shahrzad, H. for "Effective Reinforcement Learning through Evolutionary Surrogate-Assisted Prescription."

Deployed Application Award, *Innovative Applications of Artificial Intelligence Conference* (IAAI-2018), to R. Miikkulainen, N. Iscoe, A. Shagrin, R. Rapp, S. Nazari, P. McGrath, C. Schoolland, E. Achkar, M. Brundage, J. Miller, J. Epstein, G. Lamba for "Sentient Ascend: AI-Based Massively Multivariate Conversion Rate Optimization."

Outstanding Paper of the Decade (2002-2012) award of the International Society for Artificial Life for K. O. Stanley and R. Miikkulainen (2002), "Evolving Neural Networks Through Augmenting Topologies" *Evolutionary Computation*, 10:99–127.

Best-Paper Award in the Real-World Applications track, *Genetic and Evolutionary Computation Conference* (GECCO-2017, Berlin, Germany), for Yu, E. A., Yeom, J., Tutum, C. C., Vouga, E., and Miikkulainen, R. "Evolutionary Decomposition for 3D Printing."

Bronze Medal, Human Competitive Results Competition, *Genetic and Evolutionary Computation Conference* (GECCO-2017, Berlin, Germany), for Miikkulainen, R., Iscoe, N., Shagrin, A., Cordell, R., Nazari, S., Schoolland, C., Brundage, M., Epstein, J., Dean, R. and Lamba, G. (2017) "Conversion Rate Optimization through Evolutionary Computation."

Gabor Award, International Neural Network Society, 2017.

IEEE Fellow, since 2016.

Distinguished Lecturer, IEEE Computational Intelligence Society, 2015-2017.

Best-Paper Award in the Digital Entertainment and Arts track, *Genetic and Evolutionary Computation Conference* (GECCO-2015, Madrid, Spain), for Schrum, J., and Miikkulainen, R., "Solving Interleaved and Blended Sequential Decision-Making Problems through Modular Neuroevolution"

Best-Paper Award in the Digital Entertainment and Arts track, *Genetic and Evolutionary Computation Conference* (GECCO-2014, Vancouver, Canada), for Schrum, J., and Miikkulainen, R., "Evolving Multimodal Behavior With Modular Neural Networks in Ms. Pac-Man."

Deployed Application Award, *Innovative Applications of Artificial Intelligence Conference* (IAAI-2013, to A. Waters and R. Miikkulainen for "GRADE: Machine Learning Support for Graduate Admissions."

Winner, BotPrize Award (successfully passing a Turing test for game bots), at the *IEEE Conference on Computational Intelligence in Games* (CIG-12, Grenada, Spain), for the UT^2 program of Igor Karpov, Jacob Schrum, and Risto Miikkulainen.

Honorable mention, 2012 Somerfield-Ziskind Research Award, Society of Biological Psychiatry, for the article "Using Computational Patients to Evaluate Illness Mechanisms in Schizophrenia" by Ralph E. Hoffman, Uli Grasemann, Ralitza Gueorguieva, Donald Quinlan, Douglas Lane, and Risto Miikkulainen.

Winner, Humanlike Bot competition (Turing test for game bots), at the *World Congress for Computational Intelligence* (WCCI-12, Brisbane, Australia), for the $UT\hat{2}$ program of Igor Karpov, Jacob Schrum, and Risto Miikkulainen.

Best-Paper Award, *2011 IEEE Conference on Computational Intelligence and Games* (CIG-2011, Seoul, Korea), to J. Schrum and R. Miikkulainen for "Evolving Multimodal Networks for Multitask Games."

First place, Sixth Annual Competition of Pseudo-Boolean Solvers, at the *Fourteenth International Conference on Theory and Applications of Satisfiability Testing* (SAT-2011, Ann Arbor, MI), for the Borg program of B. Silverthorn and R. Miikkulainen.

First place, Fifth Annual Competition of Pseudo-Boolean Solvers, at the *Thirteenth International Conference on Theory and Applications of Satisfiability Testing* (SAT-2010, Edinburgh, UK), for the Borg program of B. Silverthorn and R. Miikkulainen.

Best Student Paper Award, *IEEE Symposium on Computational Intelligence and Games* (CIG-2009, Milan, Italy), for Schrum, J. and Miikkulainen, R. on "Evolving Multi-modal Behavior in NPCs."

Best-Paper Award in Artificial Life, Evolutionary Robotics, Adaptive Behavior, and Evolvable Hardware, *Genetic and Evolutionary Computation Conference* (GECCO-2008, Atlanta, GA), for Valsalam, V., and Miikkulainen, R., "Modular Neuroevolution for Multilegged Locomotion."

Best-Paper Award in Generative and Developmental Systems, *Genetic and Evolutionary Computation Conference* (GECCO-2007, London, UK), for Reisinger, J. and Miikkulainen, R., "Acquiring Evolvability through Adaptive Representations."

Best Student Paper Award, *IEEE Symposium on Computational Intelligence and Games* (CIG-2006, Reno, NV), for Bryant, B. and Miikkulainen, R., "Exploiting Sensor Symmetries in Example-based Training for Intelligent Agents."

Best-Paper Award in Evolutionary Robotics, A-Life, Adaptive Behavior, *Genetic and Evolutionary Computation Conference* (GECCO-2005, Washington, DC), for Valsalam, V., Bednar, J. A., and Miikkulainen, R., "Constructing Good Learners using Evolved Pattern Generators."

Best-Paper Award in Real World Applications, *Genetic and Evolutionary Computation Conference* (GECCO-2005, Washington, DC), for Sit, Y. F. and Miikkulainen, R., "Learning Basic Navigation for Personal Satellite Assistant using Neuroevolution."

Bronze Medal, Human Competitive Results Competition, *Genetic and Evolutionary Computation Conference* (GECCO-2005, Washington, DC), for Grasemann, U. and Miikkulainen, R., "Effective Image Compression using Evolved Wavelets."

Best-Paper Award, *IEEE Symposium on Computational Intelligence and Games* (CIG-2005, Essex, UK), for Stanley, K. O., Bryant, B., and Miikkulainen, R., "Evolving Neural Network Agents in the NERO Video Game."

Best-Paper Award in Real World Applications, *Genetic and Evolutionary Computation Conference* (GECCO-2003, Chicago, IL), for Gomez, F. and Miikkulainen, R., "Active Guidance for a Finless Rocket Using Neuroevolution."

Best-Paper Award in Genetic Algorithms, *Genetic and Evolutionary Computation Conference* (GECCO-2002, New York, NY), for Stanley, K. and Miikkulainen, R., "Efficient Reinforcement Learning Through Evolving Neural Network Topologies."

Francisco J. Varela Research Award, Mind and Life Institute, "Developing computational model for meditation using cross cortical synchrony in EEG data," 2006–2009, $10,000 (student: Manish Saggar).

Fellow on David Bruton Jr. Centennial Professorship #3 2005–2006, $2000.

Dean's Fellowship, College of Natural Sciences, the University of Texas at Austin, Spring 2002.

Faculty Fellowship, Department of Computer Sciences, the University of Texas at Austin, $5,000–$7,000 per year, 1995 – 2002.

National Institutes of Health, "The Source of Cross-Language Variation in Syllable Systems," NIDCD National Research Service Award 1F32-DC00459-01, March 2000 – February 2002, $65,748 (Postdoc: Dr. Melissa A. Redford).

Research Internship Award, The University of Texas at Austin, "Research Practice in Neuroevolution," September 2001 - May 2002, $18,500.

National Science Foundation (REU Supplement to grant IRI-9504317), April 1997 – September 1998, $10,000.

National Science Foundation, "Synchronization and Segmentation in a Unified Neural Network Model of the Primary Visual Cortex," IRI-940004P, 105 Service Units on Cray-90 and 119,000 SU on T3D at Pittsburgh Supercomputing Center, October 3rd 1994 – July 15th 1997.

High Performance Computer Time Grant, The University of Texas at Austin, "Handwritten Digit Recognition with the Laterally Interconnected Self-Organizing Map," $15,000 on the Cray J90, September 1st 1995 – August 31st 1996.

Special Research Grant, University Research Institute, the University of Texas at Austin, "Handwritten Digit Recognition with Laterally Connected Self-Organizing Maps", February 1996, $500.

College of Natural Sciences, the University of Texas at Austin, matching funds for equipment for the National Science Foundation Grant IRI-9504317, June 1995, $11,000.

National Science Foundation,"A Self-Organizing Neural Network Model of the Primary Visual Cortex," IRI-930005P, 1008 Service Units on Cray-90 at the Pittsburgh Supercomputing Center, June 23rd 1993 – January 15th 1995.

Summer Research Award, University Research Institute, the University of Texas at Austin, "Learning Abstractions with Distributed Neural Networks," June – July 1991, $10,222.

Max-Planck-Institute für Psycholinguistik, Nijmegen, the Netherlands, "Neural Network Models of Natural Language Processing," May 1991, $1,800.

Applied AI Systems, Ontario, Canada, "Gift to Support Natural Language Processing Research," March 1991, $1,000.

The Academy of Finland, "Neural Network Models of Natural Language Processing," January 1987 – August 1990, $34,000.

Emil Aaltonen Foundation Fellowship (Finland), 1986, 1989, 1990.

Foundation for the Advancement of Technology Fellowship (Finland), 1989, 1990.

Alfred Kordelin Foundation Fellowship (Finland), 1989.

Finnish Science Academy Fellowship, 1988.

Finnish Cultural Foundation Fellowship, 1987, 1988.

Jenny and Antti Wihuri Foundation Fellowship (Finland), 1987.

Thanks to Scandinavia Foundation Fellowship, 1987.

Economic and Technological Sciences Foundation Fellowship (Finland), 1986.

Research Grants

National Institutes of Health, "Computational modeling of language impairment and control in bilingual individuals with post-stroke aphasia and neurodegenerative disorders," (subcontract of a Boston University grant R01DC020653, PI Swathi Kiran), Jan 15th 2023 - August 31st 2028, $\tilde{\$}$1,471,261.

National Science Foundation, "PIPP Phase I: Center for Pandemic Decision Science - Developing Robust Paradigms for Anticipating and Mitigating Uncertain Pathogen Threats" (PI Lauren Meyers), 2200169, September 1, 2022 - February 29, 2024, $1,000,006.

National Institutes of Health, "Predicting Rehabilitation Outcomes in Bilingual Aphasia Using Computational Modeling," (subcontract of a Boston University grant 1U01DC014922, PI Swathi Kiran), July 1st 2016 - June 30th 2022, $1,104,698.

DARPA Lifelong Learning Machines Program, "STELLAR: Super Turing Evolving Lifelong Learning ARchitecture" (subcontract to HRL Inc. grant FA8750-18-C-0103, PI Praveen Pilly), July 2018 - Dec 2021, $535,000.

DARPA Lifelong Learning Machines Program, "Context-Dependent ; Reconfiguration of an Intelligent Neural System" (subcontract to University of Chicago grant HR0011-18-2-0024, PI Leslie M. Kay), January 2018 - November 2020, $224,166.

National Science Foundation, "BEACON: An NSF Science and Technology Center for the Study of Evolution in Action," (subcontract of a Michigan State University grant DBI-0939454, PI Erik Goodman), August 1, 2010 - July 31st, 2021, $\sim$$4,769,695.

National Institutes of Health, "The Role of Emotion and Communication in Cooperative Behavior," 1R01GM105042, September 2nd 2013 - July 31st 2017, $929,113.

Army Research Office, "Neurometric Modeling: Computational Modeling of Individual Brains," (PI David Ress), 59476-LS, June 1st 2012 - August 31st 2015, $503,717.

IARPA, "Knowledge Representation as Embodied Abstractions: Theory and Experimental Validation" (subcontract of a Teledyne, Inc. grant, PI Mario Aguilar), November 15th 2013 - January 15th 2015, FA8650-14-C-7357, $192,601.

National Science Foundation, "Learning Strategic Behavior in Sequential Decision Tasks," IIS-0915038, September 1st 2009 - August 31st 2014, $455,000

National Science Foundation, "A Predictive Simulation Model of Competitive Dynamics in Innovation," SBE-0914796, September 1st 2009 - August 31st 2013, $190,099.

National Institutes of Health, "Interdisciplinary Investigation of Biological Signatures of Autism Subtypes" (subcontract of University of California at Davis grant 1R01MH089626, PI David G. Amaral), September 30, 2009 - August 31, 2011, $66,185.

National Science Foundation, "Pilot: Leveraging Human Creativity with Machine Discovery," IIS-0757479, June 1st 2008 - May 31st 2011, $199,967.

U.S. Army Medical Research Institute, "Neurometric Modeling: Computational Modeling of Individual Brains," W911NF-10-1-0145, June 1st 2010 - February 28th, 2011, $47,039.

Texas Higher Education Coordinating Board, "Constructing Intelligent Agents in Simulated Worlds" (003658-0036-2007), June 1st 2008 – January 31st, 2011, $150,000.

National Institutes of Health, "Computational and Behavioral Evidence for Bilingual Aphasia Rehabilitation" (R21-DC009446), December 1st, 2008 - November 30th, 2011, $401,180.

The Fetzer Institute, "A Formal Theory of Meditation" (subcontract of University of California at Davis grant, PI Clifford Saron), September 1st 2008 - August 31st 2011, $86,418.

Google, Inc., "The OpenNERO AI Research and Education Platform," September 1st, 2009, $40,000.

National Science Foundation, "RI: Mastodon: A Large-Memory, High-Throughput Simulation Infrastructure" (CISE Research Infrastructure Grant EIA-0303609), September 1st 2003 - August 31st 2008, $1,927,031.

National Institutes of Health, "Neural Network Models of Schizophrenic Language" (subcontract of Yale grant 5R01-MH066228, PI Ralph Hoffman), July 1st 2003 - June 30th 2008, $185,196.

Defense Advanced Research Projects Agency, "Architectures for Cognitive Information Processing (ACIP)" (subcontract of Lockheed Martin Advanced Technology Laboratories grant FA8750-04-C-0266, PI Julius Etzl), March 26th 2004 – August 31st 2006, $700,000.

National Institutes of Health, "Computational Modeling of Cortical Maps" (Human Brain Project Grant 1R01-MH66991), April 22nd 2002 - March 31st 2006, $765,500.

Toyota Technical Center, "Collision Avoidance through Neuroevolution Reinforcement Learning", November 1st 2003 - January 15th 2006, $333,750.

Defense Advanced Research Projects Agency, "Integrating Neuroevolution Learning into TIELT" (subcontract of NRL grant N00173041G025, PI David Aha), November 1st 2004 - October 31st 2005, $80,000.

National Science Foundation, "Cooperative Coevolution of Neural Networks in Sequential Decision Tasks" (IIS-0083776), September 5th 2000 - August 31st 2004, $419,114.

Texas Higher Education Coordinating Board, "Coevolution of Neural Networks for Multi-Agent Tasks" (ARP-003658-0476-2001), January 1st 2002 – December 31st, 2003, $146,936.

National Science Foundation, "Modeling Development and Perceptual Phenomena in the Visual Cortex" (IIS-9811478), December 15th 1998 - November 30th 2001, $231,377.

National Science Foundation, "Symbiotic Evolution of Neural Networks in Sequential Decision Tasks" (IRI-9504317), September 15th 1995 – August 31st, 1999, $249,523.

Texas Higher Education Coordinating Board, "Natural Language Processing with Modular Neural Networks" (ARP-003658-444-1995), January 1st 1996 – August 31st, 1998, $91,170.

National Science Foundation, "RIA: A Self-Organizing Neural Network Model of the Primary Visual Cortex" (IRI-9309273), June 15th 1993 – May 31st 1996, $89,916.

Publications

Papers are available at nn.cs.utexas.edu, or directly by clicking on the title below.

Books

1. Risi, S., Tang, Y., Ha, D., and Miikkulainen, R. (2025). *Neuroevolution: Harnessing Creativity in AI Agent Design*. Cambridge, MA: MIT Press.
2. Príncipe, J. P. and Miikkulainen, R. (editors) (2009). *Proceedings of the Seventh Workshop on Self-Organizing Maps*. LNCS 5629. Berlin: Springer.
3. Miikkulainen, R., Bednar, J. A., Choe, Y., and Sirosh, J. (2005). *Computational Maps in the Visual Cortex*. New York: Springer.

4. Sirosh, J., Miikkulainen, R., and Choe, Y. (editors) (1996). *Lateral Interactions in the Cortex: Structure and Function*. The UTCS Neural Networks Research Group, Austin, TX. Electronic book, ISBN 0-9647060-0-8, nn.cs.utexas.edu/web-pubs/htmlbook96.
5. Miikkulainen, R. (1993). *Subsymbolic Natural Language Processing: An Integrated Model of Scripts, Lexicon, and Memory*. Cambridge, MA: MIT Press.

Journal Articles

6. Young, D., Francon, O., Meyerson, E., Schwingshackl, C., Bieker, J., Cunha, H., Hodjat, B., and Miikkulainen, R. (2025). Discovering Effective Policies for Land-Use Planning with Neuroevolution. *Environmental Data Science* 4:e30.
7. Marte, M. J., Carpenter, E., Scimeca, M., Russell, M., Peñaloza, C., Grasemann, U., Miikkulainen, R., Kiran, S. (2025). Machine learning predictions of recovery in bilingual post-stroke aphasia: Aligning insights with clinical evidence.. Stroke 56:494-504
8. Miikkulainen, R. (2025). Neuroevolution Insights Into Biological Neural Computation. *Science* 387, eadp7478. DOI: 10.1126/science.adp7478.
9. Shahrzad, H., Hodjat, B., and Miikkulainen, R. (2024). EVOTER: Evolution of Transparent Explainable Rule-sets.. *ACM Transactions on Evolutionary Learning and Optimization* (also arXiv:2204.10438).
10. Liang, J., Shahrzad, H., and Miikkulainen, R. (2024). Asynchronous Evolution of Deep Neural Network Architectures.. *Applied Soft Computing* 152:111209
11. Miikkulainen, R. (2024). Generative AI: An AI Paradigm Shift in the Making?. *AI Magazine* 1–3. https://doi.org/10.1002/aaai.12155.
12. Hodjat, B., Shahrzad, H., and Miikkulainen, R. (2024). Domain-Independent Lifelong Problem Solving through Distributed Alife Actors.. *Artificial Life* 30:259–276.
13. Penaloza, C., Grasemann, H. U., Miikkulainen, R., and Kiran, S. (2023). Modeling bilingualism as a dynamic phenomenon in healthy and neurologically affected speakers across the lifespan: A Commentary on "Computational Modeling of Bilingual Language Learning: Current Models and Future Directions". *Language Learning, https://doi.org/10.1111/lang.12566*.
14. Aguirre-Celis, N. and Miikkulainen, R. (2022). How the Brain Dynamically Constructs Sentence-level Meanings from Word-level Features. *Frontiers in Artificial Intelligence*, https://doi.org/10.3389/frai.2022.733163.
15. Kudithipudi, D., Aguilar-Simon, M., Babb, J., Bazhenov, M., Blackiston, D., Bongard, J., Brna, A. P., Raja, S. C., Cheney, N., Clune, J., Daram, A., Fusi, S., Helfer, P., Kay, L., Ketz, N., Kira, Z., Kolouri, S., Krichmar, J. L., Kriegman, S., Levin, M., Madireddy, S., Manicka, S., Marjaninejad, A., McNaughton, B., Miikkulainen, R., Navratilova, Z., Pandit, T., Parker, A., Pilly, P. K., Risi, S., Sejnowski, T. J., Soltoggio, A., Soures, N., Tolias, A. S., Urbina-Meléndez, D., Valero-Cuevas, F. J., van de Ven, G. M., Vogelstein, J. T., Wang, F., Weiss, R., Yanguas-Gil, A., Zou, Z., Siegelmann, H. (2022). Biological Underpinnings of Lifelong Learning Machines. *Nature Machine Intelligence* 4:196–210.
16. Bingham, G. and Miikkulainen, R. (2022). Discovering Parametric Activation Functions.. *Neural Networks* 148:48–65.
17. Graseman, U., Penaloza, C., Dekhtyar, M., Miikkulainen, R., and Kiran, S. (2021). Predicting Language Treatment Response in Bilingual Aphasia Using Neural Network-Based Patient Models. *Scientific Reports* 11:1-11.
18. Miikkulainen, R., Francon, O. Meyerson, E., Qiu, X., Sargent, D., Canzani, E., and Hodjat, B. (2021). From Prediction to Prescription: Evolutionary Optimization of Non-Pharmaceutical Interventions in the COVID-19 Pandemic. *IEEE Transactions on Evolutionary Computation*, 25:386–401.

19. Miikkulainen, R. and Forrest, S. (2021). A Biological Perspective on Evolutionary Computation. *Nature Machine Intelligence* 3:9–15.
20. Miikkulainen, R. (2021). Creative AI through Evolutionary Computation: Principles and Examples. *SN Computer Science* 2:163.
21. Lehman, J., Clune, J. Misevic, D., Adami, C., Beaulieu, J., Bentley, P. J., Bernard, S., Beslon, G. Bryson, D. M., Carrère, F., Cheney, N., Cully, A., Doncieux, S., Dyer, F. C., Ehinger, A., Ellefsen, K. O., Feldt, R. Fischer, S., Floreano, D. Forrest, S., Frénoy, A., Gagné, C., Le Goff, L., Grabowski, L. M., Hodjat, B., Keller, L., Knibbe, C., Krcah, P., Lenski, R. E., Lipson, H., MacCurdy, R. Maestre, C., Mansanne, F., Miikkulainen, R., Mitri, S. Moriarty, D. E., Mouret, J.-B., Nguyen, A., Ofria, C., Parizeau, M., Parsons, D., Pennock, R. T., Punch, W. F., Ray, T. S., Schoenauer, M., Schulte, E., Sims, K., Stanley, K. O., Taddei, F., Tarapore, D., Thibault, S., Weimer, W., Watson, R., Yosinski, J. (2020). The Surprising Creativity of Digital Evolution: A Collection of Anecdotes from the Evolutionary Computation and Artificial Life Research Communities. *Artificial Life*, 16:274–306.
22. Penaloza, C., Grasemann, U., Dekhtyar, M., Miikkulainen, R., Kiran, S. (2019). BiLex: A computational approach to the effects of age of acquisition and language exposure on bilingual lexical access. *Brain and Language* 195:104643.
23. Miikkulainen R., Brundage M., Epstein J., Foster, T., Hodjat, B., Iscoe N., Jiang, J., Legrand, D., Nazari S., Qiu, X., Scharff, M., Schoolland C., Severn, R., and Shagrin A. (2020). Ascend by Evolv: AI-Based Massively Multivariate Conversion Rate Optimization. *AI Magazine* 41:44-60.
24. Stanley, K. O., Clune, J., Lehman, J., and Miikkulainen R. (2019). Designing Neural Networks through Evolutionary Algorithms. *Nature Machine Intelligence* 1:24-35.
25. Huang, P.-C., Sentis, L., Lehman, J., Fok, C.-L., Mok, A., and Miikkulainen, R. (2019). Tradeoffs in Neuroevolutionary Learning-Based Real-Time Robotic Task Design in the Imprecise Computation Framework. *ACM Transactions on Cyber-Physical Systems* Vol. 3, No. 2, 14:1-29.
26. Lockett, A. and Miikkulainen, R. (2017). A Probabilistic Re-Formulation of No Free Lunch: Continuous Lunches Are Not Free. *Evolutionary Computation* 25:503–528.
27. Alden, M. and Miikkulainen, R. (2016). MARLEDA: Effective Distribution Estimation Through Markov Random Fields. *Theoretical Computer Science*, 633:4-18.
28. Schrum, J. and Miikkulainen, R. (2016). Solving Multiple Isolated, Interleaved, and Blended Tasks through Modular Neuroevolution. *Evolutionary Computation* 24:459–490.
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Refereed Conference Papers

102. Xu, K. and Miikkulainen, R. (2025). Neural Cellular Automata for ARC-AGI. In *Proceedings of the 2025 Conference on Artificial Life* (Alife 2025).
103. Prabhakaran, D., Grasemann, H., Kiran, S., Miikkulainen, R. (2025). How the Stroop Effect Arises from Optimal Response Times in Laterally Connected Self-Organizing Maps.. In *Proceedings of the 47th Annual Meeting of the Cognitive Science Society* (Cogsci 2025, San Francisco).
104. Waldner, D. and Miikkulainen, R. (2025) The Odyssey of the Fittest: Can Agents Survive and Still Be Good?. In *Proceedings of the 47th Annual Meeting of the Cognitive Science Society* (Cogsci 2025, San Francisco).
105. Gonzalez, S., Qiu, X., and Miikkulainen, R. (2025). Effective Regularization Through Evolutionary Loss-Function Metalearning. In *Proceedings of the 2025 IEEE Congress on Evolutionary Computation* (CEC-2025, Hangzhou, China).
106. Qiu, X. an Miikkulainen, R. (2024). Uncertainty Quantification in Semantic Space for Large Language Models.. In *Proceedings of the 38th Conference on Neural Information Processing Systems* (NeurIPS 2024).
107. Meyerson, E., Francon, O., Sargent, D., Hodjat, B., and Miikkulainen, R. (2024). Unlocking the Potential of Global Human Expertise.. In *Proceedings of the 38th Conference on Neural Information Processing Systems* (NeurIPS 2024).
108. Warner, J., Devaraj, A., and Miikkulainen, R. (2024). Using context to adapt to sensor drift. In *Proceedings of the International Conference on Development and Learning* (ICDL 2024).
109. Wang, W., Hu, Y., Tiwari, M., Khurshid, S., McMillan, K. and Miikkulainen, R. (2024). NeuroBack: Improving SAT Solving with Graph Neural Networks.. In *Proceedings of the International Conference on Learning Representations*, (ICLR-2024).
110. Bingham, G. and Miikkulainen, R. (2023). Efficient Activation Function Optimization through Surrogate Modeling.. In *Proceedings of the 37th Conference on Neural Information Processing Systems* (NeurIPS 2023).
111. Qiu, X., and Miikkulainen, R. (2023). Shortest Edit Path Crossover: A Theory-driven Solution to the Permutation Problem in Evolutionary Neural Architecture Search. In *Proceedings of the International Conference on Machine Learning* (ICML-2023, Honolulu, HI).
112. Shahrzad, H. and Miikkulainen, R. (2023). Evolution Through Gene Masking and Distributed Search.. In *Proceedings of the Genetic and Evolutionary Computation Conference* (GECCO-2023), 972–980.
113. Bingham, G. and Miikkulainen, R. (2023). AutoInit: Analytic Signal-Preserving Weight Initialization for Neural Networks. In *Proceedings of the 37th AAAI Conference on Artificial Intelligence* (AAAI-2023; Washington, DC; oral presentation)
114. Fidelman, M., Grasemann, H., Penaloza, C., Scimeca, M., Quiroz, Y., Kiran, S., and Miikkulainen, R. (2022). Constructing Individualized Computational Models for Bilingual Dementia Patients. In *Proceedings of the 44th Annual Meeting of the Cognitive Science Society* (Cogsci 2022, Toronto, Canada).
115. Hodjat, B., Shahrzad, H., and Miikkulainen, R. (2022). DIAS: A Domain-Independent Alife-Based Problem-Solving System. In *Proceedings of the 2022 Conference on Artificial Life* (Alife'22).
116. Meyerson, E., Qiu, X., and Miikkulainen, R. (2022). Simple Genetic Operators are Universal Approximators of Probability Distributions (and other Advantages of Expressive Encodings).. In *Proceedings of the Genetic and Evolutionary Computation Conference* (GECCO-2022), 739-748. Best-Paper Award in the GA track.
117. Kumar, A., Liu, B., Stone, P. and Miikkulainen, R. (2022). Effective Mutation Rate Adaptation through Group Elite Selection.. In *Proceedings of the Genetic and Evolutionary Computation Conference* (GECCO-2022).

118. Qiu, X. and Miikkulainen, R. (2022). Detecting Misclassification Errors in Neural Networks with a Gaussian Process Model.. In *Proceedings of the 36th AAAI Conference on Artificial Intelligence* (AAAI-2022; oral presentation).
119. Tutum, C., Abdulquddos, S., and Miikkulainen, R. (2021). Generalization of Agent Behavior through Explicit Representation of Context.. In *Proceedings of the 3rd IEEE Conference on Games* (COG-2021).
120. Liner, E. and Miikkulainen, R. (2021). Improving Neural Network Learning Through Dual Variable Learning Rates. In *Proceedings of the International Joint Conference on Neural Networks* (IJCNN-2021).
121. Liang, J., Gonzalez, S., Shahrzad, H., and Miikkulainen, R. (2021). Regularized Evolutionary Population-Based Training. In *Proceedings of the Genetic and Evolutionary Computation Conference* (GECCO-2021), 323–331.
122. Miikkulainen, R., Meyerson, E., Qiu, X., Sinha, U., Kumar, R., Hofmann, K., Yan, Y. M., Ye, M., Yang, J., Caiazza, D., Manson Brown, S. (2021). Evaluating Medical Aesthetics Treatments through Evolved Age-Estimation Models. In *Proceedings of the Genetic and Evolutionary Computation Conference* (GECCO-2021), 1009–1017. Silver Award, Human Competitive Results Competition.
123. Gonzalez, S. and Miikkulainen, R. (2021). Optimizing Loss Functions Through Multivariate Taylor Polynomial Parameterization. In *Proceedings of the Genetic and Evolutionary Computation Conference* (GECCO-2021), 305–313.
124. Meyerson, E. and Miikkulainen, R. (2021). The Traveling Observer Model: Multi-task Learning Through Spatial Variable Embeddings.. In *Proceedings of the International Conference on Learning Representations*, (ICLR-2021).
125. Aguirre-Celis, N. and Miikkulainen, R. (2020). Characterizing Dynamic Word Meaning Representations in the Brain. In M. Zock, A. Lenci, and S. Evert (editors), *Proceedings of the 6th Workshop on Cognitive Aspects of the Lexicon (CogALex VI)*. The COLING 2020 Organizing Committee.
126. Tutum, C. and Miikkulainen, R. (2020). Adapting to Unseen Environments through Explicit Representation of Contex. In *Proceedings of the 2019 Conference on Artificial Life* (Alife'20, Montreal, Canada).
127. Francon, O., Gonzalez, S., Hodjat, B., Meyerson, E., Miikkulainen, R., Qiu, X., and Shahrzad, H. (2020). Effective Reinforcement Learning through Evolutionary Surrogate-Assisted Prescription.. In *Proceedings of the Genetic and Evolutionary Computation Conference* (GECCO-2020). Best-Paper Award in the GECH track.
128. Bingham, G., Macke, W., and Miikkulainen, R. (2020). Evolutionary Optimization of Deep Learning Activation Functions. In *Proceedings of the Genetic and Evolutionary Computation Conference.* (GECCO-2020), 289–296.
129. Rajagopalan, P., Holekamp, K. E. and Miikkulainen, R. (2020). Evolution of Complex Coordinated Behavior.. In *Proceedings of the 2020 IEEE Congress on Evolutionary Computation* (CEC-2020, Glasgow, Scotland). Best Paper Award.
130. Wang, X. and Miikkulainen, R. (2020). MDEA: Malware Detection with Evolutionary Adversarial Learning.. In *Proceedings of the 2020 IEEE Congress on Evolutionary Computation* (CEC-2020, Glasgow, Scotland).
131. Gonzalez, S. and Miikkulainen, R. (2020). Improved Training Speed, Accuracy, and Data Utilization via Loss Function Optimization.. In *Proceedings of the 2020 IEEE Congress on Evolutionary Computation* (CEC-2020, Glasgow, Scotland), 1–8.
132. Jiang, J., Legrand, D., Severn, R., and Miikkulainen, R. (2019). A Comparison of the Taguchi Method and Evolutionary Optimization in Multivariate Testing.. In *Proceedings of the 2020 IEEE Congress on Evolutionary Computation* (CEC-2020, Glasgow, Scotland).

133. Qiu, X., Meyerson, E., and Miikkulainen, R. (2020). Quantifying Point-Prediction Uncertainty in Neural Networks via Residual Estimation with an I/O Kernel.. In *Proceedings of the International Conference on Learning Representations*, (ICLR-2020, Addis Ababa, Ethiopia).
134. Meyerson, E. and Miikkulainen, R. (2019). Modular Universal Reparameterization: Deep Multi-task Learning Across Diverse Domains. In *Proceedings of the 33rd Annual Conference on Neural Information Processing Systems* (NeurIPS 2019).
135. Dai, G., Paluri, P. K., Carmichael, T., Cheng, A., and Miikkulainen. R. (2019). Work-In-Progress: Leveraging the Selfless Driving Model to Reduce Vehicle Network Congestion. In *Proceedings of the IEEE Real-time Symposium*.
136. Grasemann, U., Penaloza, C., Dekhtyar, M., Kiran, S., and Miikkulainen, R. (2019). Evolutionary Optimization of Neural-Network Models of Human Behavior. In *Proceedings of the International Conference on Cognitive Modeling* (ICCM-2019, Montreal, Canada).
137. Rajagopalan, P., Holekamp, K., and Miikkulainen, R. (2019). Factors that Affect the Evolution of Complex Cooperative Behavior. In *Proceedings of the 2019 Conference on Artificial Life* (Alife'19, Newcastle, UK).
138. Aguirre-Celis, N. and Miikkulainen, Risto (2019). Quantifying the Dynamic Effects of Conceptual Combination on Word Meanings using Neural Networks. In *Proceedings of the 41st Annual Meeting of the Cognitive Science Society*.
139. Liang, J., Meyerson, E., Fink, D., Mutch, K., and Miikkulainen, R. (2019). Evolutionary Neural AutoML for Deep Learning.. In *Proceedings of the Genetic and Evolutionary Computation Conference* (GECCO-2019, Prague, Czech Republic), 401–409.
140. Wolfe, C., Tutum, C. C., and Miikkulainen, R. (2019). Functional Generative Design of Mechanisms with Recurrent Neural Networks and Novelty Search.. In *Proceedings of the Genetic and Evolutionary Computation Conference* (GECCO-2019, Prague, Czech Republic).
141. Gonzalez, S., Landgraf, J., and Miikkulainen, R. (2019). Faster Training by Selecting Samples Using Embeddings In *Proceedings of the International Joint Conference on Neural Networks* (IJCNN-2019, Budapest, Hungary), 1–7.
142. Qiu, X. and Miikkulainen, R. (2019). Enhancing Evolutionary Optimization in Uncertain Environments via Multi-Armed Bandit Algorithms. *Proceedings of the 31st Conference on Innovative Applications of Artificial Intelligence* (IAAI-2019, Honolulu, HI).
143. Aguirre-Celis, N., Miikkulainen, R. (2018). Combining fMRI Data and Neural Networks to Quantify Contextual Effects in the Brain. In *Proceedings of the Brain Informatics 2018 Conference*, LNAI 11309, Berlin, Heidelberg, New York: Springer.
144. Meyerson, E. and Miikkulainen, R. (2018). Pseudo-task Augmentation: From Deep Multitask Learning to Intratask Sharing—and Back. In *Proceedings of the 35th International Conference on Machine Learning* (ICML-2018, Stockholm, Sweden), 739-748.
145. Shahrzad, H., Fink, D., and Miikkulainen, R. (2018). Enhanced Optimization with Composite Objectives and Novelty Selection. In *Proceedings of the 2018 Conference on Artificial Life* (Alife'18, Tokyo, Japan).
146. Tutum, C. C., Chockchowwat, S., Vouga, E., and Miikkulainen, R. (2018). Functional Generative Design: An Evolutionary Approach to 3D-Printing. In *Proceedings of the Genetic and Evolutionary Computation Conference* (GECCO-2018, Kyoto, Japan).
147. Li, X and Miikkulainen, R. (2018). Opponent Modeling and Exploitation in Poker Using Evolved Recurrent Neural Networks . In *Proceedings of the Genetic and Evolutionary Computation Conference* (GECCO-2018, Kyoto, Japan).
148. Liang, J., Meyerson, E., and Miikkulainen, R. (2018). Evolutionary Architecture Search for Deep Multitask Networks. In *Proceedings of the Genetic and Evolutionary Computation Conference* (GECCO-2018, Kyoto, Japan), 466-473.

149. Meyerson, E. and Miikkulainen, R. (2018). Beyond Shared Hierarchies: Deep Multitask Learning through Soft Layer Ordering. In *Proceedings of the International Conference on Learning Representations*, (ICLR-2018, Vancouver, CA).
150. Miikkulainen R., Iscoe N., Shagrin A., Rapp R., Nazari S., McGrath P., Schoolland C., Achkar, E., Brundage M., Miller J., Epstein J., Lamba G. (2018). Sentient Ascend: AI-Based Massively Multivariate Conversion Rate Optimization. *Proceedings of the Thirtieth Conference on Innovative Applications of Artificial Intelligence* (IAAI-2018, New Orleans, LA). IAAI Deployed Application Award.
151. Miikkulainen, R., Shahrzad, H., Duffy, N., and Long, P. (2017). How to select a winner in evolutionary optimization? In *Proceedings of the IEEE Symposium Series in Computational Intelligence* (IEEE-SSCI 2017, Honolulu, HI).
152. Meyerson, E. and Miikkulainen, R. (2017). Discovering Evolutionary Stepping Stones through Behavior Domination. *Proceedings of the Genetic and Evolutionary Computation Conference* (GECCO-2017, Berlin, Germany).
153. Miikkulainen, R., Iscoe, N., Shagrin, A., Cordell, R., Nazari, S., Schoolland, C., Brundage, M., Epstein, J., Dean, R. and Lamba, G. (2017). Conversion Rate Optimization through Evolutionary Computation. *Proceedings of the Genetic and Evolutionary Computation Conference* (GECCO-2017, Berlin, Germany). Bronze Medal, Human Competitive Results Competition.
154. Yu, E., Yeom, J., Tutum, C. C., Vouga, E., and Miikkulainen, R. (2017). Evolutionary Decomposition for 3D Printing. *Proceedings of the Genetic and Evolutionary Computation Conference* (GECCO-2017, Berlin, Germany). Best-Paper Award in Real-World Applications.
155. Aguirre-Celis, N., Valenzuela-Rendon, M., and Miikkulainen, R. (2017). From Words to Sentences & Back: Characterizing Context-dependent Meaning Representations in the Brain. In *Proceedings of the 39th Annual Meeting of the Cognitive Science Society*.
156. Braylan, A. and Miikkulainen, R. (2016). Object-Model Transfer in the General Video Game Domain. *Proceedings of the Fourth Artificial Intelligence and Interactive Digital Entertainment Conference* (AIIDE-16, Burlingame, CA).
157. Li, X. and Miikkulainen, R. (2016). Evolving Artificial Language Through Evolutionary Reinforcement Learning. In *Proceedings of Fifteenth International Conference on the Synthesis and Simulation of Living Systems* (Alife'16, Cancun, Mexico).
158. Hodjat, B., Shahrzad, H., and Miikkulainen, R. (2016). Distributed Age-Layered Novelty Search. In *Proceedings of the Fifteenth International Conference on the Synthesis and Simulation of Living Systems* (Alife'16, Cancun, Mexico).
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Recent Technical Reports

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Software Systems

All software packages are available under the GNU General Public Software License at nn.cs.utexas.edu, or directly by clicking on the links below.

ES Fine Tuning: Evolution Strategies are used to optimize billions of parameters of large langauge models (LLMs), September 2025 (with Xin Qiu).

RHEA: Unlocking the Potential of Global Human Expertise. Realizing Human Expertise through AI (RHEA) unlocks the latent potential in diverse human-developed solutions by injecting them into an evolutionary process, October 2024 (with Elliot Meyerson).

SD: Uncertainty Quantification for LLMs. Semantic density (SD) provides a response-wise uncertainty/confidence score for large language models (LLMs), October 2024 (with Xin Qiu).

LMX: Language Model Crossover (LMX) uses large language models as the engine of evolution, driving recombination and variation for any task where solutions are representable as text, May 2023 (with Elliot Meyerson).

SEPX: Solving the Permutation Problem in NAS. Shortest Edit Path Crossover (SEPX) directly recombines architectures in the original graph space, overcoming the permutation problem in traditional evolutionary neural architecture search (NAS), May 2023 (with Xin Qiu).

AQuaSurF: Optimizing activation functions through surrogate modeling, January 2023 (with Garrett Bingham).

ContextSkillCarla: Context+Skill neural network applied to the CARLA automated driving domain, January 2023 (with Suhaib Abdulquddos and Cem Tutum).

AutoInit: Initializing deep learning networks automatically so that learning will be more robust and effective, January 2022 (with Garrett Bingham).

RED: Residual-based error detection (RED) extends RIO to classification, detecting misclassification errors and distinguishing them from out-of-distribution inputs and adversarial inputs, January 2022 (with Xin Qiu).

TOM: The Traveling Observer Model (TOM) implements deep multi-task learning through spatial variable embeddings, December 2021 (with Elliot Meyerson).

BiLex: A self-organizing map model of bilingual aphasia, December 2021 (with Uli Grasemann and Peggy Fidelman).

ContextSkillFlappyBall: Context-skill model for extrapolation to unseen environments in the Flappy Ball domain, December 2021 (with Cem Tutum).

TaylorGLO: Evolution of loss-functions for a given architecture and task through multivariate Taylor polynomial parameterization, resulting in automatic regularization, October 2021 (with Santiago Gonzalez).

RIO: Residual estimation with an input/output kernel (RIO) quantifies confidence in point-prediction models and improves their accuracy, October 2021 (with Xin Qiu).

MUiR: Modular Universal Reparameterization (MUiR) makes deep multitask learning possible across diverse domains such as language, vision, genetics, etc., October 2021 (with Elliot Meyerson).

ContextSkillDrift: A gas classifier using an explicit context model to deal with sensor drift, October 2021 (with Jamieson Warner)

XPRIZE Pandemic Response Challenge: Sample predictors, prescriptors, and evaluation software for COVID-19 modeling competition, November 2020 (with Olivier Francon, Babak Hodjat, Elliot Meyerson, and Darren Sargent).

SwiftCMA: CMA-ES library in Swift, V1.0 July 2019 (with Santiago Gonzalez).

SwiftGenetics: Genetic Algorithm library in Swift, V1.0 July 2019 (with Santiago Gonzalez).

Object Model Transfer: Software for transfering models from known games to unfamiliar games, August 2016 (with Alexander Braylan).

MM-NEAT: software for Multiobjective evolution of modular neural networks, V1.0 May 2014, V1.1 October 2015 (with Jacob Schrum).

OpenNERO simulation environment for research in multiagent systems, October 2008 (with Igor Karpov and John Sheblak), V2.0 February 2010 (with Igor Karpov, Daniel Lessin, Vinod Valsalam, Adam Dziuk, and Minh Pham), V2.1 August 2011 (with Igor Karpov and Adam Dziuk), V2011.12.14 December 2011 (with Igor Karpov), V2015.05.28 May 2015 (with Reza Mahjourian).

BBMS: software for simulating troop movements and optimizing scout locations, May 2015 (with Brian Boyles).

BREVE Monsters: software for exploring the evolution of multimodal behavior using neural networks, February 2014 (with Jacob Schrum).

MARLEDA: distribution estimation using a Markov Random Field model, October 2013 (with Matthew E. Alden).

mMARLEDA: multiobjective optimization using MARLEDA, October 2013 (with Matthew E. Alden).

UT^2: software for the BotPrize 2012 winning entry, September 2012 (with Igor Karpov and Jacob Schrum).

PyEC software for Evolutionary Annealing and a number of other evolutionary and stochastic optimization algorithms. V0.1 May 2011 (with Alan Lockett), V0.2 in July 2012 (with Alan Lockett).

ESL software for Egalitarian Social Learning in the robot foraging domain, June 2012 (with Eliana Feasley and Wesley Tansey).

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BORG algorithm portfolio software, July 2011 (with Bryan Silverthorn).

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SOFM self-organizing map software, September 1994; v3.0 December 2002 (with Marty Mayberry).

SignalSim event-driven simulator of an interconnected network of spiking neurons, September 1990 (by Risto Miikkulainen); v2.0 December 2002 (with Marty Mayberry).

TEAM software for probabilistic model based evolution, July 2002 (with Matt Alden).

PGLISSOM software for modeling perceptual grouping in the visual cortex, March 2002 (with Yoonsuck Choe)

LISSOM software for self-organizing maps with lateral connections, July 1994 (with Joseph Sirosh); v2.0 October 1998; v3.0 November 2001 (with James A. Bednar).

SANE software for Symbiotic, Adaptive Neuro-Evolution for sequential decision tasks; C version v1.0 May 1996 (with David Moriarty); v2.0 May 1997 (with David Moriarty); v2.1 August 2000 (with Bram Stolk); Java version October 1998 (with Cynthia Matuszek).

MIR software for rapid prototyping of sentence processing architectures, October 1998 (with Marshall Mayberry).

Pole-balancing simulations for neuron-level SANE, February 1995 (with David Moriarty).

PROC connectionist story processing system, September 1994.

DISLEX lexicon model, September 1994.

HFM hierarchical feature maps, September 1994.

FGREPNET software for learning distributed word representations, September 1994.

SPEC subsymbolic sentence processing software, August 1994.

DISCERN story processing package (to accompany the *Subsymbolic NLP* book [3]), May 1993.

Websites and Web-based Resources

Neuroevolutionbook.com: The html version of the book "Neuroevolution: Harnessing Creativity in AI Agent Design", as well as demos, tutorials, class materials, exercises, and other community resources, November 2025 (with Sebastian Risi, Yujin Tang, David Ha, Paul Jarratt, Julianna Nijmeh, and Manasha Vengat).

Decision AI: Research lab website focusing on AI in decision-making, June 2025 (with Paul Jarratt and Julianna Nijmeh).

Semantic Density: An interactive demo of the semantic density metric for trustworthiness of LLMs, April 2025 (with Xin Qiu).

Act-Bench: Benchmark datasets for optimizing activation functions, January 2023 (with Garrett Bingham).

AI-based Intervention Recommendations for COVID-19, an interactive web-based demo based on the ESP technology; v1.0 May 2020; v2.0 March 2021 (with Olivier Francon, Babak Hodjat, Elliot Meyerson, Xin Qiu, Darren Sargent, and Hormoz Shahrzad).

Modernized Decision Making, a microsite presenting evolutionary surrogate-assisted prescription (ESP) technology; May 2020 (with Olivier Francon, Santiago Gonzalez, Babak Hodjat, Elliot Meyerson, Xin Qiu, and Hormoz Shahrzad).

"The Pulse of AI" Podcasts, five podcasts discussing recent progress in AI; July 2020 (with Jason Staughton and Babak Hodjat).

Evolutionary AI: Research lab website focusing on Evolutionary AI, May 2020 (with Santiago Gonzalez).

Evolutionary Computation Expert Video Interviews, 17 interviews on opportunities and challenges for evolutionary computation and AI; August 2018 (with Paul Jarratt and Andrew Turner).

Evolution is the New Deep Learning, a microsite showcasing recent progress on evolutionary computation; March 2018 (with Babak Hodjat, Jason Liang, Elliot Meyerson, Xin Qiu, Aditya Rawal, Hormoz Shahrzad).

Patents

Gonzalez, S., Liang, J. and Miikkulainen, R. (2025). System and Method for Evolved Data Augmentation and Selection. United States Patent 12,406,188.

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Liang, J. Z., Meyerson, E., Miikkulainen, R. (2025). Multiobjective Coevolution of Deep Neural Network Architectures. United States Patent 12,282,845

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Francon, O., Hodjat, B., and Miikkulainen, R. (2024). Framework for Interactive Exploration, Evaluation, and Improvement of AI-Generated Solutions. United States Patent 12,099,934.

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Gonzalez, S. and Miikkulainen, R. (2024). System and Method for Loss Function Metalearning for Faster, More Accurate Training, and Smaller Datasets. United States Patent 12,026,624.

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Francon, O., Hodjat, B., Miikkulainen, R., and Shahrzad H. (2023). Process and system including an optimization engine with evolutionary surrogate-assisted prescriptions. United States Patent 11,783,195.

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Shahrzad H., Hodjat, B., and Miikkulainen, R. (2023). Data Mining Technique with Distributed Novelty Search. United States Patent 11,574,202.

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Shahrzad, H., Fink, D., and Miikkulainen, R. (2022). Enhanced Optimization with Composite Objectives and Novelty-Diversity Selection. United States Patent 11,527,308.

Liang, J., Shahrzad, H., Hodjat, B., and Miikkulainen, R., (2022). Asynchronous Evaluation Strategy for Evolution of Deep Neural Networks. United States Patent 11,507,844.

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Liang, J. and Miikkulainen, R. (2022). Evolution of Deep Neural Network Structures. United States Patent 11,250,327.

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Meyerson, E., and Miikkulainen, R. (2022). Behavior Dominated Search in Evolutionary Search Systems. United States Patent 11,247,100

Rawal, A. and Miikkulainen, R. (2021). Evolving Recurrent Networks Using Genetic Programming. United States Patent 11,182,677.

Liang, J. Z., Meyerson, E., Miikkulainen, R. (2021). Evolution of architectures for multitask neural networks. United States Patent 11,030,529

Liang, J. Z., Meyerson, E., Miikkulainen, R. (2021). Evolutionary architectures for evolution of deep neural networks. United States Patent 11,003,994

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Brundage, M. and Miikkulainen, R. (2021). Data object creation and recommendation using machine learning based offline evolution. United States Patent 10,963,506.

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Hodjat, B., Shahrzad, H., and Miikkulainen, R. (2019). Data Mining Technique with Distributed Novelty Search. United States Patent 10,430,709.

Sherony, R., Miikkulainen, R., Stanley, K. O., and Kohl, N. (2009). Crash Prediction Network with Visual Input for Vehicle. United States Patent 7,613,569.

Sherony, R., Miikkulainen, R., Stanley, K. O., and Kohl, N. (2009). Crash Prediction Network With Graded Warning for Vehicle. United States Patent 7,565,231.

Stanley, K. O. and Miikkulainen R. (2009). Method and Apparatus for Providing Real-Time Machine Learning to Computer-Controlled Agents Used in Video Games. United States Patent 7,559,843.

Miikkulainen, R., Dahlin, M. D., and Lipscher, R. P. (2006). Systems and methods for adaptive medical decision support. United States Patent 6,988,088.

Nineteen US patents pending.

Teaching

Graduate Courses

Cognitive Science
Neural Networks
Artificial Intelligence
Research Practice and Experience

Undergraduate Courses

Neuroevolution
Neural Networks
Artificial Intelligence
Computational Intelligence in Game Design I and II

Postdoctorals Supervised

Uli Grasemann, Research Scientist, The University of Texas at Austin, Fall 2016 – Summer 2022, since Summer 2023; Research Educator, Spring 2011 - Summer 2012.

Cem Tutum, Research Scientist, The University of Texas at Austin, Spring 2018-Fall 2020; Clinical Assistant Professor, Spring 2015-Spring 2018. Relativity Space Inc.

Padmini Rajagopalan, Fall 2016 – Summer 2017. Shell Inc., Bengaluru, India.

Joel Lehman, Research Educator, The University of Texas at Austin, Fall 2012 - Fall 2014. Assistant Professor, IT University of Copenhagen.

Kenneth O. Stanley, Fall 2004 – Fall 2005. Assistant Professor, University of Central Florida.

Faustino Gomez, Fall 2003 – Spring 2004. Postdoc, IDSIA, Switzerland.

James A. Bednar, Summer 2002 - Summer 2004. Lecturer, University of Edinburgh.

Melissa Redford, Spring 2000 - Spring 2002. Assistant Professor, University of Oregon.

Igor Farkas, Fall 1998. Research Fellow, University of Richmond.

Daniel Polani, Fall 1997. Reader, Department of Computer Science, University of Hertfordshire, UK.

Dissertations Supervised

Jamieson Warner, "Developmental Generative Models of Brain Connectivity," Spring 2025. Cognizant AI Labs.

Garrett Bingham, "Optimizing Neural Networks through Activation Function Discovery and Automatic Weight Initialization," Spring 2023. Cognizant AI Labs.

Kimble Houck, "Hardware Implementation of Inference in Deep Neural Networks," Spring 2022. GrammaTech, Inc.

Nora Elsa Aguirre Sampayo (Monterrey Institute of Technology and Higher Education, Mexico) "From Words to Sentences and Back: Characterizing Context-dependent Meaning Representations in the Brain," Fall 2021.

Santiago Gonzalez, "Improving Deep Learning Through Loss-Function Evolution," Fall 2020. Apple, Inc.

Reza Mahjourian, "Hierarchical Policy Design For Sample-Efficient Learning Of Robot Table Tennis Through Self-Play," Fall 2018. Waymo, Inc.

Jason Liang, “Evolutionary Neural Architecture Search For Deep Learning,” Fall 2018. Sentient Technologies, Inc.

Elliot Meyerson, “Discovering Multi-Purpose Modules Through Deep Multitask Learning ,” Fall 2018. Sentient Technologies, Inc.

Xun Li, “Opponent Modeling and Exploitation Using Evolved Recurrent Neural Networks,” Summer 2018. Twitter, Inc.

Aditya Rawal, “Discovering Gated Recurrent Neural Network Architectures,” Spring 2018. Uber.ai.

Padmini Rajagopalan, “The Evolution of Coordinated Cooperative Behaviors,” Fall 2016. Shell, Inc.

Jeremy Stober, “Sensorimotor Embedding: A Developmental Approach to Learning Geometry,” Spring 2015. Apple, Inc.

Erkin Bahceci, “Competitive Multi-Agent Search,” Fall 2014. Google, Inc.

Daniel Lessin, “Open-Ended Behavioral Complexity for Evolved Virtual Creatures,” Fall 2014; co-advisor Don Fussell. Postdoc, IT University of Copenhagen.

Jacob Schrum, “Evolving Multimodal Behavior Through Modular Multiobjective Neuroevolution,” Spring 2014. Assistant Professor, Southwestern University.

Austin Waters, “Analyzing Collections of Digital Media Documents with Hierarchical Bayesian Models,” Spring 2014. Google, Inc.

Bryan Silverthorn, “A Probabilistic Architecture for Algorithm Portfolios,” Spring 2012. Angaza Design, Inc.

Alan Lockett, “General-Purpose Optimization Through Information Maximization,” Spring 2012. Postdoc, IDSIA, Switzerland.

Manish Saggar, “Computational Analysis Of Meditation,” Summer 2011; co-advisor Cliff Saron, UC Davis. Postdoc, Stanford University.

Uli Grasemann, “A Subsymbolic Model Of Language Pathology In Schizophrenia”, Fall 2010. Co-advisor Ralph Hoffman, Yale. Research Educstor, the University of Texas at Austin.

Vinod Valsalam, “Utilizing Symmetry in Evolutionary Design,” Summer 2010. TwoSigma, Inc.

Yiu Fai Sit, “A Population Gain Control Model of Spatiotemporal Responses in the Visual Cortex,” Summer 2009; co-advisor Eyal Seidemann.

Nate Kohl, “Learning in Fractured Problems with Constructive Neural Network Algorithms”, Summer 2009. Google, Inc.

Tal Tversky, “Motion Perception and the Scene Statistics of Motion”, Spring 2008; co-advisor Wilson S. Geisler. Apple, Inc.

Matthew E. Alden, “MARLEDA: Effective Distribution Estimation Through Markov Random Fields”, Fall 2007. Lecturer, University of Washington, Tacoma.

Judah B. De Paula, “Modeling the Self-Organization of Color Selectivity in the Visual Cortex”, Fall 2007; co-advisor James A. Bednar, University of Edinburgh, UK. DuPont Pioneer, Inc.

Jefferson Provost, “Reinforcement Learning in High-Diameter Environments”, Summer 2007; co-advisor Benjamin J. Kuipers. Apple Inc.

Bobby D. Bryant, “Evolving Visibly Intelligent Behavior for Embedded Game Agents”, Fall 2006. Assistant Professor, University of Nevada, Reno.

Elizabeth C. Kaczmarczyk (Interdisciplinary), “The Acquisition Of Intellectual Expertise: A Computational And Empirical Theory,” Summer 2005. Assistant Professor, Rose-Hulman Institute of Technology.

Yaron Silberman (Hebrew University, Israel), “Characteristics of Forming Episodic Associations Between Words,” Spring 2005; co-advisor Shlomo Bentin, Hebrew University, Israel. Siemens, Inc.

Kenneth O. Stanley, "Efficient Evolution of Neural Networks through Complexification," Summer 2004. Assistant Professor, University of Central Florida.

Harold H. Chaput, "The Constructivist Learning Architecture: A Model of Cognitive Development for Robust Autonomous Robots," Summer 2004; co-advisor Benjamin J. Kuipers. Electronic Arts, Inc.

Marshall R. Mayberry, III, "Broad-Coverage Parsing with Neural Networks," Summer 2003. Postdoc, University of Saarland, Germany.

Faustino Gomez, "Robust Nonlinear Control with Neuroevolution," Summer 2003. Postdoc, IDSIA, Switzerland.

Paul H. McQuesten, "Cultural Enhancement of Neuroevolution," Summer 2002. Assistant Professor, University of Redlands.

James A. Bednar, "Self-Organization of Visual Function: Expressing Genetics through Learning," Spring 2002. Bert Kay Best Dissertation Award, Department of Computer Sciences, The University of Texas at Austin. Lecturer, University of Edinburgh, UK.

Yoonsuck Choe, "Perceptual Grouping in a Self-Organizing Map of Spiking Neurons," Summer 2001. Assistant Professor, Texas A&M University.

David Moriarty, "Symbiotic Evolution of Neural Networks in Sequential Decision Tasks," Spring 1997. Apple, Inc.

Joseph Sirosh, "A Self-Organizing Neural Network Model of the Primary Visual Cortex," Fall 1995. HNC Software, Inc.

Wee Kheng Leow, "VISOR: Learning Visual Schemas in Neural Networks for Object Recognition and Scene Analysis," Spring 1994. Assistant Professor, National University of Singapore.

Masters Theses Supervised

Marlan McInnes-Taylor, "Deep Generative Similarity-Weighted Interleaved Learning", Summer 2025.

Margaret C. von Ebers, "From Sensory Input to Cognitive Maps: Exploring the Significance of Spatial Representations in Artificial Hippocampal Models", Fall 2024.

Hormoz Shahrzad, "Accelerating Evolution Through Gene Masking and Distributed Search", Spring 2023.

Suhaib Abdulquddos, "Adapting to Unseen Driving Conditions Using Context-Aware Neural Networks", Fall 2022.

Xiruo Wang, "MDEA: Malware Detection with Evolutionary Adversarial Learning," Fall 2019.

Alexander Braylan, "Object-Model Transfer in the General Video Game 1Domain," Summer 2019.

Jason Zhi Liang, "Evolutionary Bilevel Optimization for Neuroevolution," Spring 2015.

Brian Boyles, "Optimizing Formation Observations Through Neuroevolution" Spring 2015.

Anand Subramoney, "Evaluating Modular Neuroevolution in Robotic Keepaway Soccer," Fall 2012.

Vito Ruiz, "Adaptation in a Deep Network", Spring 2011; co-advisor Jonathan Pillow.

Aravind Gowrisankar, "Evolving Controllers for Simulated Car Racing Using Neuroevolution", Fall 2008.

Thomas W. D'Silva, "Evolving Robot Arm Controllers Using the NEAT Neuroevolution Method", Spring 2006; co-advisor Benjamin Kuipers.

German A. Monroy, "Coevolution of Neural Networks Using a Layered Pareto Archive", Fall 2005.

John Prior, "Eugenic Evolution for Combinatorial Optimization," Spring 1998.

Shailesh Kumar, "Confidence-Based Dual Reinforcement Q Routing: An On-line Adaptive Network Routing Algorithm," Spring 1998.

James A. Bednar, "Tilt Aftereffects in a Self-Organizing Model of the Visual Cortex," Spring 1997.

Rick Tanney (Philosophy), "Reflections in Silicon: Artificial and Natural Neural Networks," Spring 1997; co-advisor Robert Causey.

Justine Blackmore, "Visualizing High-Dimensional Structure with the Incremental Grid Growing Neural Network", Fall 1995.

Yoonsuck Choe, "Laterally Interconnected Self-Organizing Feature Map in Handwritten Digit Recognition." Fall 1995.

Undergraduate Honors Theses Supervised

Rivaaj Monsia, "Leveraging Evolutionary Surrogate-Assisted Prescription in Multi-Objective Chlorination Control Systems," Fall 2025.

Cameron Wolfe, "Data Augmentation for Deep Transfer Learning," Fall 2019.

Arjun Nagineni, "Learning Useful Features for Poker," Fall 2018.

Patrick B. Haley, "The Evolution of Language Groups among Cooperating Predators," Spring 2016.

Matthew de Wet, "Avoiding Premature Convergence in Neuroevolution by Broadening the Evolutionary Search," Fall 2010.

Adam Dziuk, "Creating Intelligent Agents through Shaping of Coevolution," Fall 2010.

Chris Bush, "An Analysis of Automated Decision Making Methodologies in Role Playing Video Games: Centralized Approach," Spring 2010.

Matthew Johnston, "An Analysis of Distributed Decision Making Methodologies in Role Playing Video Games," Spring 2010.

Timothy Nodine, "Speciation in NEAT," Spring 2010.

David Robson, "Hierarchical Neural Networks for Behavior-Based Decision Making," Spring 2010.

Nathaniel Tucker, "Evolving Adaptive Intelligence: Using NeuroEvolution with Temporal Difference Methods in the Game Domain," Spring 2009.

Yonatan Bisk, "The Necessity of Separating Control and Logic when Grounding Language Using Neuroevolution," Spring 2009.

Christopher J. Clark, "A Computational Model of Distributed Neural Integration in the Brittlestar Sensorimotor System," Fall 2007; co-advised with Jennifer Morgan.

James Craver, "Example-based Training in Neuroevolution," Fall 2007.

Paul Williams, "Learning Visual Scene Descriptions: An Approach to Symbol Grounding," Fall 2005.

Ryan Cornelius, "Improving Prescripted Agent Behavior with Neuroevolution," Spring 2005.

Joseph Reisinger, "A Symbiotic Method for Modular Reuse and Problem Decomposition with Neuro-Evolution," Fall 2003.

Timothy Andersen, "Neuroevolution through Augmenting Topologies Applied to Evolving Neural Networks to Play Othello," Spring 2002.

Brian Greer, "Numerical Optimization with Neuroevolution," Fall 2001. AMD, Austin.

Andres Santiago Perez-Bergquist, "Applying ESP and Region Specialists to Neuro-Evolution for Go," Spring 2001.

Chern Han Yong, "Cooperative Coevolution of Multi-Agent Systems," Fall 2000.

Chun-Chi Chen, "Automatic Music Composition using Genetic Algorithm and Neural Networks: A Constrained Evolution Approach," Fall 2000.

Todd Greer, "Evolving Hierarchical Neural Networks to Play Go," Spring 1998.

Norman Richards, "Evolving Neural Networks to Play Go," Fall 1996.

Rupert Tang, "A Connectionist Corpus-Based Approach to the Building of Word Representations," Fall 1994.

James A. Bednar, "Multi-Level Neural Network Language Translator," Spring 1993.

Brad Fullmer, "Evolving Finite State Behavior using Marker-Based Genetic Encoding of Neural Networks," Spring 1991.

Current Student Supervision

Advisor for PhD students Chloe Chen, Divya Prabhakaran, Hormoz Shahrzad, Daniel Young, and masters student John Knowlton.

External Dissertation and Thesis Evaluation

External evaluator of the dissertation of Zeki Erden, Ecole polytechnique federale de Lausanne, "Foundations of a New Learning Paradigm in AI Grounded in the Principles of Evolutionary Developmental Biology", Boi Faltings, Supervisor, Summer 2025.

External evaluator of the dissertation of Gauri Vaidya, University of Limerick, "Efficient Hyperparameter Optimization for Streamlining Model Training in Machine and Deep Learning", Conor Ryan, Supervisor, Spring 2025.

External evaluator of the dissertation of Arkadiy Dushatskiy, Delft University of Technology,"Expensive Optimization with Model-Based Evolutionary Algorithms Applied to Medical Image Segmentation Using Deep Learning", Peter Bosman, Supervisor, Summer 2023.

External evaluator of the dissertation of Adham Salih, Tel Aviv University, "Many-Objective Topology and Weight Evolution of Artificial Neural Networks", Amiram Moshaiov, Supervisor, Spring 2023.

External Evaluator of the Masters Thesis of Chien-Lun Huang, Department of Computer Science, University of Cape Town, "Neuro-Evolution Search Methodologies for Collective Self-Driving Vehicles," Geoff Nitschke, supervisor, Summer 2019.

External Evaluator of the Masters Thesis of Edmore Moyo, Department of Computer Science, University of Cape Town, "Accelerated Cooperative Co-Evolution on Multi-core Architectures," Michelle Kuttel and Geoff Nitschke, supervisors, Spring 2018.

External Evaluator of the dissertation of Sabre Didi, Department of Computer Science, University of Cape Town, "Neuro-Evolution Behavior Transfer for Collective Behavior Tasks," Geoff Nitschke, supervisor, Fall 2017.

External Evaluator of the Masters Thesis of Sunrise Wang, Department of Computer Science, University of Cape Town, "Evolving Controllable Emergenet Crowd Behaviours with Neuro-Evolution," James Gain and Geoff Nitschke, supervisors, Summer 2015.

External Evaluator of the dissertation of Royce R. Smart, School of Aerospace, Mechanical, and Manufacturing Engineering, RMIT University, Australia, "Evolutionary Control of Autonomous Underwater Vehicles," John Wharington and Pavel Trivailo, supervisors, Fall 2008.

External Evaluator of the dissertation of Alon Keinan, School of Computer Science, Tel-Aviv University, Israel,"Localization of Function via Multi-Perturbation Analysis: Theory and Applications for the Analysis of Neural Networks," Eytan Ruppin and Isaac Meilijson, supervisors, Fall 2005.

Dissertation Opponent for Krista Lagus, Department of Computer Science, Helsinki University of Technology, "Text Mining with the WEBSOM," Erkki Oja, supervisor, Fall 2000.

External Evaluator of the dissertation of Samuel W. K. Chan, Department of Computer Science, University of New South Wales, Sydney, Australia,"Discourse Comprehension: A NeuroSymbolic Approach," James Franklin, supervisor, Spring 1997.

External Evaluator of the dissertation of Heikki Hy}otyniemi, Control Engineering Laboratory, Helsinki University of Technology, Finland "Self-Organizing Artificial Neural Networks in Dynamic Systems Modeling and Control," Antti Niemi and Jouko Virkkunen, supervisors, Fall 1994.

Member of 79 completed and two current doctoral committees.

Member of four completed Masters committees and 12 completed undergraduate honors thesis committees.

Service

Conference and Workshop Chair Positions

Advisory Co-Chair, *IEEE Conference on Games* (CoG-2022, Beijing, China).

Track Co-Chair for Neuroevolution, *Genetic and Evolutionary Computation Conference* (GECCO-2022) 2021–2022.

Track Co-Chair for Neuroevolution, *Genetic and Evolutionary Computation Conference* (GECCO-2021, Lille, France; online) 2020–2021.

Co-chair (with Chrisantha Fernando, Quoc Le, and Ken Stanley), "Metalearning," Symposium at the *Neural Information Processing Systems* (NIPS 2017) conference, December 2017, Long Beach, CA.

Track Co-Chair for Complex Systems, *Genetic and Evolutionary Computation Conference* (GECCO-2017, Berlin, Germany) 2016–2017.

Track Co-Chair for Complex Systems, *Genetic and Evolutionary Computation Conference* (GECCO-2016, Denver, CO), 2015–2016.

Co-chair, Workshop on Cognitive Computation: Integrating Neural and Symbolic Approaches, NIPS 2015.

Co-chair, 10th International Workshop on Neural-Symbolic Learning and Reasoning (NeSy'15), IJCAI 2015.

Technical Program Co-Chair, *Congress on Evolutionary Computation* (CEC-2011, New Orleans, LA), 2011.

Program Co-Chair, *The 2010 IEEE Conference on Computational Intelligence and Games* (CIG-10, Copenhagen, Denmark), 2010.

Program Chair, "Workshop on Self-Organizing Maps" (WSOM-2009, St. Augustine, FL), 2009.

Program Chair, *The Fourth IEEE Symposium on Computational Intelligence and Games* (CIG-08, Perth, Australia), 2008.

Co-chair (with James A. Bednar), "Modeling Cortical Map Development," Workshop at the *Tenth Annual Computational Neuroscience Meeting* (CNS*2001), July 2001.

Co-chair (with Joseph Sirosh), "Computational Role of Lateral Connections in the Cortex," Workshop at the *Neural Information Processing Systems* (NIPS'94) conference, December 1994.

Program Committees

The AAAI Conference on Artificial Intelligence (AAAI-26, Singapore), Area Chair, 2026.

ACM Workshop on NeuroEvolution at Work (NEWK), Genetic and Evolutionary Computation Conference (GECCO-2025, Malaga, Spain, 2025.

Genetic and Evolutionary Computation Conference (GECCO-24, Malaga, Spain, 2025.

The AAAI Conference on Artificial Intelligence (AAAI-25, Philadelphia, PA), Area Chair, 2025;

AutoML Conference 2024 (Paris, France), Area Chair, 2024;

ACM Workshop on NeuroEvolution at Work (NEWK), Genetic and Evolutionary Computation Conference (GECCO-2024, Melbourne, Australia, 2024.

Genetic and Evolutionary Computation Conference (GECCO-24, Melbourne, Australia, 2024.

Workshop on Self-Organizing Maps (WSOM'24, Mittweida, Germany), 2024.

The AAAI Conference on Artificial Intelligence (AAAI-24, Vancouver, Canada), Area Chair, 2024;

AutoML Conference 2023 (Potsdam/Berlin, Germany), Area Chair, 2023;

ACM Workshop on NeuroEvolution at Work (NEWK), Genetic and Evolutionary Computation Conference (GECCO-2023, Lisbon, Portugal, 2023.

Genetic and Evolutionary Computation Conference (GECCO-23, Lisbon, Portugal), 2023.

The AAAI Conference on Artificial Intelligence (AAAI-23, Washington, DC), Area Chair, 2023;

ACM Workshop on NeuroEvolution at Work (NEWK), Genetic and Evolutionary Computation Conference (GECCO-2022, Boston, MA, 2022.

First Conference on Automated Machine Learning (AutoML-Conf 2022, Baltimore, MD), Area Chair, 2022;

The AAAI Conference on Artificial Intelligence (AAAI-22, Vancouver, Canada), Area Chair, 2022;

Student Workshop, Genetic and Evolutionary Computation Conference (GECCO-2021, Lille, France; online), 2021.

ACM Workshop on NeuroEvolution at Work (NEWK), Genetic and Evolutionary Computation Conference (GECCO-2021, Lille, France; online), 2021.

The AAAI Conference on Artificial Intelligence (AAAI-21, Vancouver, Canada; online), Area Chair, 2021;

International Joint Conference in Artificial Intelligence (IJCAI-21, Montreal, Canada; online), Area Chair, 2021;

Genetic and Evolutionary Computation Conference (GECCO-20, Cancun, Mexico; online), 2020.

International Joint Conference in Artificial Intelligence (IJCAI-20, Yokohama, Japan; online), Area Chair, 2020;

International Joint Conference in Artificial Intelligence (IJCAI-19, Macau, China), Area Chair, 2019;

Genetic and Evolutionary Computation Conference (GECCO-19, Prague, Czech Republic), 2019.

Genetic and Evolutionary Computation Conference (GECCO-18, Kyoto, Japan), 2018.

The 6th International Conference on the Theory and Practice of Natural Computing (TPNC 2017, Prague, Czech Republic)

Workshop on Self-Organizing Maps (WSOM'16, Houston, TX), 2016.

The 4th International Conference on the Theory and Practice of Natural Computing (TPNC 2015, Mieres, Spain)

Genetic and Evolutionary Computation Conference (GECCO-15, Madrid, Spain), 2015.

International Joint Conference on Neural Networks (IJCNN'15, Killarney, Ireland).
Senior Program Committee Member

The 3rd International Conference on the Theory and Practice of Natural Computing (TPNC 2014, Granada, Spain)

Genetic and Evolutionary Computation Conference (GECCO-14, Vancouver, Canada), 2014.

International Joint Conference on Neural Networks (IJCNN'14, Beijing, China), 2014.
Senior Program Committee Member.

Workshop on Self-Organizing Maps (WSOM'14, Mittweida, Germany), 2014.

International Joint Conference on Neural Networks (IJCNN'13, Dallas, TX).
Senior Program Committee Member

Foundations of Digital Games Conference (FDG, Crete), 2013.

Congress on Evolutionary Computation (CEC-13, Cancun, Mexico), 2013.

Genetic and Evolutionary Computation Conference (GECCO-13, Amsterdam, the Netherlands), 2013.

Artificial Intelligence in Interactive Digital Entertainment Conference (AIIDE-12, Stanford, CA), 2012.

Genetic and Evolutionary Computation Conference (GECCO-12, Philadelphia, PA), 2012.

Congress on Evolutionary Computation (CEC-12, Brisbane, Australia), 2012.

Evolutionary Computation in Games (EvoGAMES-12, Malaga, Spain), 2012.

The 2011 IEEE Conference on Computational Intelligence and Games (CIG-11, Seoul, Korea), 2011.

Artificial Intelligence in Interactive Digital Entertainment Conference (AIIDE-11, Stanford, CA), 2011.

International Joint Conference on Neural Networks (IJCNN'11, San Jose, CA). Plenary Chair

Workshop on Self-Organizing Maps (WSOM'11, Helsinki, Finland), 2011.

Artificial Intelligence in Interactive Digital Entertainment Conference (AIIDE-10, Stanford, CA), 2010.

The 2010 IEEE Conference on Computational Intelligence and Games (CIG-10, Copenhagen, Denmark), 2010.

Genetic and Evolutionary Computation Conference (GECCO-10, Portland, OR), 2010.

The 4th International Conference on Language and Automata Theory and Applications (LATA 2010, Trier, Germany)

The Second European Conference on Bio-inspired Algorithms in Games (EvoGames 2010, Istanbul, Turkey), 2010.

The Fifth IEEE Symposium on Computational Intelligence and Games (CIG-09, Milan, Italy), 2009.

Artificial Intelligence in Interactive Digital Entertainment Conference (AIIDE-09, Stanford, CA), 2009.

International Conference on Development and Learning (ICDL'09, Shanghai, China). Area Chair

International Joint Conference on Neural Networks (IJCNN'09, Atlanta, GA). Vice Chair

Genetic and Evolutionary Computation Conference (GECCO-09, Montreal, Canada), 2009.

Evolutionary Computation and Games Session, Congress on Evolutionary Computation (CEC-09, Trondheim, Norway), 2009.

International Conference on Development and Learning (ICDL'08, Asilomar, CA).
Senior Program Committee Member

Artificial Intelligence in Interactive Digital Entertainment Conference (AIIDE-08, Stanford, CA), 2008.

Genetic and Evolutionary Computation Conference (GECCO-08, Atlanta, GA), 2008.

World Congress on Computational Intelligence (WCCI-2008, Hong Kong), 2008.
Senior Program Committee member.

Thirtieth Annual Conference of the Cognitive Science Society (COGSCI-2008, Washington, DC), 2008.
Senior Program Committee member.

The AAAI Conference on Artificial Intelligence (AAAI-07, Vancouver, Canada), 2007.
Senior Program Committee member.

Twenty-ninth Annual Conference of the Cognitive Science Society (COGSCI-2007, Nashville, TN), 2007.
Senior Program Committee member.

Genetic and Evolutionary Computation Conference (GECCO-07, London, UK), 2007.

Innovative Applications of Artificial Intelligence (IAAI-07, Vancouver, Canada), 2007.

Workshop on Self-Organizing Maps (WSOM'07, Bielefeld, Germany), 2007.

The Third IEEE Symposium on Computational Intelligence and Games (CIG-07, Honolulu, HI), 2007.

Language and Automata Theory and Applications (LATA-07, Tarragona, Spain), 2007.

Innovative Applications of Artificial Intelligence (IAAI-06, Boston, MA), 2006.

Genetic and Evolutionary Computation Conference (GECCO-06, Seattle, WA), 2006.

Twentyeighth Annual Conference of the Cognitive Science Society (COGSCI-2006, Vancouver, Canada), 2006. Senior Program Committee Member.

Twentyfirst National Conference on Artificial Intelligence (AAAI-06, Boston, MA), 2006.

The Second IEEE Symposium on Computational Intelligence and Games (CIG-06, Reno, NV), 2006.

Evolutionary Computation and Games Session, Congress on Evolutionary Computation (CEC-05, Edinburgh, UK), 2005.

Innovative Applications of Artificial Intelligence (IAAI-05, Pittsburgh, PA), 2005.

International Joint Conference on Neural Networks (IJCNN-05, Montreal, Canada), 2005. Area chair for evolutionary methods.

Genetic and Evolutionary Computation Conference (GECCO-05, Washington, DC), 2005.

Workshop on Self-Organizing Maps (WSOM'05, Paris, France), 2005.

The First IEEE Symposium on Computational Intelligence and Games (CIG-05, Essex, UK), 2005.

International Conference on Development and Learning (ICDL'04, San Diego, CA).

The 21st International Conference on Machine Learning (ICML-2004, Banff, Canada), 2004. Area chair for Evolutionary Computation and Neural Networks.

Evolutionary Computation and Games Session, Congress on Evolutionary Computation (CEC-04, Portland, OR), 2004.

Evolutionary Computation and Games Session, Congress on Evolutionary Computation (CEC-03, Canberra, Australia), 2003.

Genetic and Evolutionary Computation Conference (GECCO-03, Chicago, IL), 2003.

Workshop on Self-Organizing Maps (WSOM'03, Kitakyushu, Japan), 2003.

Understanding Coevolution: Theory and Analysis of Coevolutionary Algorithms. Workshop at the Genetic and Evolutionary Computation Conference (GECCO-02, New York, NY), 2002.

Genetic and Evolutionary Computation Conference (GECCO-02, New York, NY), 2002.

Second International Conference on Development and Learning (ICDL'02, Boston, MA).

The Second Workshop on Natural Language Processing and Neural Networks (NLPNN2001, Tokyo, Japan), 2001.

Workshop on Coevolution, Genetic and Evolutionary Computation Conference (GECCO-2001, San Francisco, CA), 2001.

Workshop on Self-Organizing Maps (WSOM'01, Lincoln, UK), 2001.

CELE-Twente Workshops on Natural Language Technology 2000: Learning to Behave (Ieper, Belgium).

ACAI-99 Workshop on Biologically Inspired Machine Learning (Crete, Greece), 1999.

Sixteenth National Conference on Artificial Intelligence (AAAI-99, Orlando, FL), 1999.

Genetic and Evolutionary Computation Conference (GECCO-99, Orlando, FL), 1999.

Fourth Argentine Congress on Computer Science (Buenos Aires, Argentina), 1998.

Workshop on Self-Organizing Maps (WSOM97, Helsinki, Finland), 1997.

Second Argentinian Congress on Computer Science (Buenos Aires, Argentina), 1996.

Eighteenth Annual Conference of the Cognitive Science Society (COGSCI-96, San Diego, CA), 1996. Area chair for Computer Science.

Thirteenth National Conference on Artificial Intelligence (AAAI-96, Portland, OR), 1996.

Reviewing

Journals: *Applied Intelligence*; *Artificial Intelligence*; *Behavior Research Methods, Instruments, and Computers*; *Behavior and Brain Sciences*; *Biological Cybernetics*; *Brain and Language*; *Cognitive Science*; *Connection Science*; *Decision Support Systems*; *Evolutionary Computation*; *Evolutionary Intelligence*; *IEEE Intelligent Systems*; *IEEE Transactions on Data Mining*; *IEEE Transactions on Evolutionary Computation*; *IEEE Transactions on Neural Networks*; *IEEE Transactions on Systems, Man, and Cybernetics*; *Infancy*; *Information and Computation*; *Information Processing Letters*; *International Journal of Computational Intelligence and Applications*; *International Journal of Intelligent Mechatronics*; *International Journal of Man-Machine Studies*; *International Journal of Neural Systems*; *Journal of Artificial Intelligence Research*; *Journal of Biological Chemistry*; *Journal of Machine Learning Research*; *Machine Learning*; *Nature Machine Intellignece*; *Network: Computation in Neural Systems*; *Neural Computation*; *Neural Computing Surveys*; *Neural Networks*; *Neural Processing Letters*; *Neurocomputing*; *Parallel Processing Letters*; *Philosophical Transactions of the Royal Society PLOS ONE*; *Proceedings of the IEEE Proceedings of the National Academy of Sciences Psycoloquy*; *Psychology of Learning and Motivation*; *Soft Computing*; *U.S. Navy Journal of Underwater Acoustics*.

Ad hoc reviewer for conferences: *International Joint Conference in Artificial Intelligence* (IJCAI-18, Stockholm, Sweden), in 2018; *International Conference on Artificial Neural Networks* (ICANN, Vienna, Austria), 2001; *Neural Information Processing Systems: Natural and Synthetic* (NIPS, Denver, CO), 1992, 1993, 1994, 1997, 1999; *The 1999 Conference of the Texas Linguistic Society: Perspectives on Argument Structure* (Austin, TX), 1998; *International Joint Conference in Artificial Intelligence* (IJCAI-97, Nagoya, Japan), in 1997; *IEEE International Conference on Tools with Artificial Intelligence* (New Orleans, LA) 1995; *IEEE Conference on Decision and Control*, 1992. *IEEE Conference on Decision and Control* (Tucson, AZ), 1992.

Member of the National Science Foundation review panels: National AI Research Institutes: Robust Intelligence: Collaborative Research in Computational Neuroscience; Knowledge Models and Cognitive Systems; Perception, Action, and Cognition; Computational Cognition; Information and Intelligent Systems;

Ad hoc reviewer for NSF; NIH; European Research Council Consolidator Grant Panel; Austrian Science Fund; Netherlands Organization for Scientific Research; Israel Science Foundation; European Science Foundation; NSERC (Canada); EPSRC (UK); Qatar National Research Fund; Marsden Foundation (New Zealand); Swiss National Science Foundation; National Research Foundation (South Africa); UT Research Grants.

Judge for the Siemens Westinghouse Competition Southwest Regional Finals, University of Texas at Austin, 2002.

Judge for AI XPrize, 2017-2019.

Chair of the NSF site visit panel for evaluating the "Artificial and Natural Intelligence" AI Institute, Columbia University, 2024.

Memberships in Professional Societies

IEEE Computational Intelligence Society, since 2006.

IEEE, since 2006; senior member, 2014-2015; Fellow, since 2016.

ACM SIGEVO, since 2005.

ACM, since 2009.

Cognitive Science Society, since 1989.

International Neural Network Society, since 1987; Senior Member, since 2008; Fellow, since 2024.

Association for the Advancement of Artificial Intelligence, since 1987; Fellow, since 2023.

Society for Neuroscience 2002–2010

Invited Talks and Lectures

On Creative and Multiagent AI Decision Making

Keynote at the 6th International Conference on Data Analytics for Business and Industry, Kingdom of Bahrain (online), October 2025.

Keynote at the Raion AI Summit, Gibraltar, March 2025.

Agentic AI Summit, UC Berkeley, August 2025.

Better Societies Masterclass/Webinar, April 2025.

School of Computer and Communication Sciences, Ecole Polytechnique Federale de Lausanne, Switzerland, July 2025.

Department of Computer Science, National University of Singapore, April 2025

On Generative AI

Plenary talk at the 5th Polish Conference on Artificial Intelligence, Warsaw, Poland, April 2024

National Association for Business Economics Webinar, with Matt Berri and Colin Gray, August 2024.

Generative AI Industry Workshop, Cognizant, Helsinki, Finland, April 2024.

Digital Leadership Webinar, Cognizant (online), May 2023.

On Optimizing COVID-19 Interventions Through Machine Learning

Invited talk at the "Workshop on Decision Support Paradigms to Reduce Uncertainty and Ground Policy", Austin, TX, March 2023.

Invited talk at the "NDR - The Artificial Intelligence Conference" (online), November 2021.

Keynote talk at the Cognizant Softvision Programmers Week conference (online), September 2021.

Keynote talk at the 26th IEEE Symposium on Computers and Communications (IEEE ISCC 2021), Athens, Greece (online), September 2021.

Center for Pandemic Decision Science (online), March 2023.

Presentation at the "AI Approaches for COVID-19" panel at the AI in a Post-COVID World Virtual Conference, Pennsylvania State University (online), May 2021.

On Evolutionary Surrogate-Assisted Prescription

Invited talk at the IEEE CIS Workshop on Computational Intelligence and Machine Learning Applications, Hyderabad, India (online), September 2020.

Invited talk at the International Workshop on Artificial Neural Networks, Hyderabad, India (online), September 2020.

Invited talk at the Advanced Course on Data Science and Machine Learning (ACDL2020), Siena, Italy (online), July 2020.

Amirkabir University, Tehran, Iran (online), September 2021.

Austin Deep Learning Meetup, Austin TX (online), August 2021.

Helsinki Distinguished Lecture Series on Future Information Technology, Helsinki, Finland (online), November 2020.

Intelligent Systems Center, Missouri University of Science and Technology (online), October 2020.

Bithacks student group, San Ramon, CA (online), August 2020.

Information Science Institute, University of Southern California (online), August 2020.

Department of Computer Science and Engineering, Southern University of Science and Technology, Shenzhen, China (online), June 2020.

On Creative AI through Evolutionary Computation

Invited talk at the "Evolution Beyond Biology Symposium", New York University, April 2024

Keynote at the Congress on Evolutionary Computation, Wellington, New Zealand, June 2019.

Keynote at the Systemic Risk Analytics Conference, Helsinki, Finland, May 2019.

Keynote at the Evostar Conference, Leipzig, Germany, April 2019.

Invited talk at the Symposium on Back to the Future and Beyond: Traversing the Ever-Evolving Landscape of Evolutionary Algorithms, Delft University of Technology, the Netherlands (online), September 2019

Invited talk at the Active LENS Workshop, The University of Texas at Austin, June 2019

Cognizant Leadership Speaks Series, June 2019

Computer Science Department, University of Helsinki, Finland, May 2019.

Intel Austin, March 2019

On Evolution of Neural Networks

Keynote talk at the *Neuro-Inspired Computing Elements*, San Antonio, TX, April 2023

Keynote talk at the *Second International Conference on Emerging Techniques in Computational Intelligence*, Hyderabad, India (online), August 2022

Keynote talk at the *Nineth International Conference on Pattern Recognition and Machine Intelligence (PReMI'21)* Kolkata, India (online), December 2021.

Plenary talk at the *Congress on Evolutionary Computation* (CEC-2021), Krakow, Poland (online), July 2021.

Invited talk at the Learning to Learn workshop at the International Conference on Learning Representations (ICLR-2021; Vienna, Austria; online), May 2021.

Invited talk at the *IEEE Hyderabad CIS Summer School 2018 Computational Intelligence: Theory, Implementation and Applications*, Hyderabad, India (online), November 2018.

Invited talk at the *O'Reilly Artificial Intelligence Conference*, San Francisco, CA, September 2018

Invited talk in the Symposium on Metalearning at the *Neural Information Processing Systems Conference* (NIPS 2017), Long Beach, CA, December 2017.

Invited talk at the *O'Reilly Artificial Intelligence Conference*, New York, NY, June 2017.

Invited talk in the Symposium on Recurrent Neural Networks and Other Machines that Learn Algorithms at the *Neural Information Processing Systems Conference* (NIPS 2016), Barcelona, Spain, December 2016.

Invited talk at the *IEEE MetroCon 2016* conference, Arlington, TX, October 2016.

Invited talk at the Deep Learning Workshop at the *INNS Conference on Big Data*, San Francisco, CA, August 2015.

TENNLab Neuromorphic Computing Research Group, University of Tennessee, Knoxville, June 2023.

Andalusian Research Institute on Data Science and Computational Intelligence, Grenada, Spain (online), March 2022

Google Brain, Mountain View, CA, September 2018.

Department of Brain and Cognitive Sciences, MIT, March 2018.

Biodesign Institute, Arizona State University, January 2018.

Gokaraju Rangaraju Institute of Engineering and Technology, Hyderabad, India, December 2017.

IBM Hyderabad, India, December 2017.

IEEE CIS Distinguished Lecture, Hyderabad Chapter, India, December 2017.

SparkCognition, Inc, Austin, TX, August 2017.

Information Science Institute, University of Southern California, March 2017.

IEEE CIS Distinguished Lecture, Las Vegas Chapter, March 2016.

IEEE CIS Distinguished Lecture, Bogota Chapter, November 2015.

On Constructing Intelligent Agents Through Neuroevolution

Invited talk at the Foundations of Intelligence Workshop at Santa Fe Institute (online), March 2021.

Keynote talk at the annual meeting of the *Korean Computer Scientists and Engineers Association in America*, San Jose, CA, December 2013.

Keynote talk at the *AAAI Fall Symposium on How Should Intelligence be Abstracted in AI Research*, Arlington, VA, November 2013.

Plenary talk at the *World Congress on Computational Intelligence*, Brisbane, Australia, June 2012.

Invited talk at the *IEEE MetroCon 2010* conference, Arlington, TX, September 2010.

Plenary talk at the *Seventh International Conference on Intelligent Systems Design and Applications*, Rio de Janeiro, October 2007.

IEEE CIS Distinguished Lecture, Reykjavik Chapter, February 2017.

Sentient Technologies, Inc., August 2015

Department of Mathematics and Computer Science, North Carolina A&T University, October 2013.

Advanced Analytics Institute, University of Technology Sydney, Australia, June 2012.

UT Austin ACM Student Chapter, October 2008.

MITRE Emerging Technologies Speaker Series, May 2008.

Computer Science Department, Michigan State University, November 2006.

Computer Science Department, University of Nevada, Reno, October 2006.

On Predicting Treatment Effects in Bilingual Aphasia

Invited talk at the Brain Recovery Symposium, Tianqiao and Chrissy Chen Institute, Redwood City CA, October 2025.

Synapse meeting, The University of Texas at Austin, April 2023

Center for Theoretical and Cognitive Neuroscience, The University of Texas at Austin, February 2022 (online).

Cognitive Science Department, UC Irvine, January 2022 (online).

On Constructing Intelligent Agents in Games

IEEE CIS Distinguished Lecture, Beijing Chapter, October 2017.

IEEE CIS Distinguished Lecture, Fort Worth Chapter, July 2015.

Invited talk at the *Neuromorphic Computing Workshop*, MITRE, McLean, VA, April 2008.

Invited talk at the *INNS Texas/MIND/UTA Conference on Goal-Directed Neural Systems*, Arlington, TX, November 2006.

Invited talk at the *National Academy of Engineering Frontiers of Engineering Conference*, Ann Arbor, MI, September 2006.

Keynote address at the *Game-On North America Conference*, Monterey, CA, September 2006.

Plenary talk at the *World Congress on Computational Intelligence*, Vancouver, BC, July 2006.

Keynote talk at the *IEEE Symposium on Computational Intelligence and Games*, April 2005.

Invited talk at the *Conference on AI in Games*, the University of Texas at Austin, August 2003.

Computer Science Department, University of Nevada, Reno, April 2007

On Solving Sequential Decision Tasks with Neuroevolution

Invited talk at the *Road to Software Evolvability Workshop*, Santa Fe Institute, June 2005.

Invited talk at the *AAAI Fall Symposium on Real-World Reinforcement Learning*, October 2004.

Invited talk at the *CELE Workshop on Evolutionary Language Engineering 2*, Ieper, Belgium, November 2000.

Invited talk at the *Neural Computing in Science and Technology Workshop*, Maale Hachamisha, Israel, October 1999.

Keynote address at the *IASTED Conference on Artificial Intelligence and Soft Computing*, Banff, Canada, July 1997.

Invited talk at the *Conference on Neural Networks for Novel High-Order Rule Formation*, Texas A&M University, May 1995.

Computer Science Department, University of Michigan, April 2006.

Computer Science Department, University College London, October 2005.

International Computer Science Institute (ICSI), University of California, Berkeley, June 2005.

Institute of Systems Engineering, Swiss Federal Institute of Technology (EPFL), May 2005.

Toyota Technical Center, Ann Arbor, August 2004.

School of Computing, National University of Singapore, July 2004.

Department of Computer Science, Texas A & M University, November 2001.

Department of Computer Science, University of Richmond, January 2001.

ACM talk series, the University of Texas at Austin, October 2000.

Center for Artificial Intelligence, ITESM, Monterrey, Mexico, May 2000.

Department of Engineering, Cambridge University, UK, July 1998.

Department of Computer Science, Tel Aviv University, Israel, June 1998.

Faculty of Industrial Engineering, Technion, Israel, June 1998.

Sigma Xi Society, The University of Texas at Austin, March 1998.

Society of Computational Biology, The University of Texas at Austin, February 1998.

Matematico e Informatico, Universidade Eduardo Mondlane, Maputo, Mozambique, Dec. 1996.

Department of Computer Science, University of California, Irvine, July 1995.

Department of Computer Science, University of Helsinki, Finland, June 1995.

Computer Science Department, University of California, Los Angeles, April 1995.

International Computer Science Institute (ICSI), University of California, Berkeley, March 1995.

Department of Computer Science, Stanford University, March 1995.

Department of Computer Science, Carnegie Mellon University, February 1995.

On Computational Modeling of Schizophrenic Language Processing

Invited talk at the *AAAI Spring Symposium on Story-Enabled Intelligence*, Stanford, CA, March 2018.

Invited talk at the *Workshop on Self-Organizing Maps*, Houston, TX, January 2016.

Invited talk at the DARPA Workshop on *Narrative Networks (N2): The Neurobiology of Narratives*, San Francisco, CA, April 2011.

Invited talk at the Workshop on *Grand Challenges in Neural Computation II: Neuromimetic Processing and Synthetic Cognition,* Santa Fe, NM, February 2011.

Department of Computer Science, Southwestern University, April 2015.

Institute for Neuroscience, The University of Texas at Austin, January 2011.

On Dyslexic and Aphasic Impairments in a Self-Organizing Model of the Lexicon

Invited talk at the *Second International Workshop on Neural Modeling of Brain and Cognitive Disorders*, University of Maryland, June 1998.

Invited talk at the *First Annual Woolfolk Lectures in Communication Sciences and Disorders*, San Antonio, February 1997.

Invited talk at the *Biennial Meeting of the World Federation of Neurology: Research Group on Aphasia and Cognitive Disorders*, Budapest, Hungary, June 1994.

Max-Planck-Institute für Psycholinguistik, Nijmegen, the Netherlands, May 1992.

Department of Cognitive Science, Johns Hopkins University, August 1991.

On Modeling the Development and Function in the Primary Visual Cortex

Invited talk at the *Information Processing in the Visual System Workshop*, Mathematical BioSciences Institute, Ohio State University, April 2007

Invited talk at the *Sixth University of Texas Neuroscience Symposium,* February 2001.

Invited talk at the *Self-Organizing Systems Workshop*, UMIST, Manchester, UK, October 1999.

Invited talk at the *Workshop on Self-Organizing Maps* (WSOM'99), Helsinki University of Technology, Finland, July 1999.

Invited talk at the *Fifth International Conference on Neural Information Processing* (ICONIP-98), Kitakyushu, Japan, October 1998.

Neurobiology Club, the University of Texas at Austin, September 2009.

Department of Electrical Engineering and Computer Science, Rice University, April 2008.

Institute for Neuroscience, the University of Texas at Austin, November 2007.

Center for Theoretical Neuroscience, Columbia University, April 2006.

Redwood Center for Theoretical Neuroscience, University of California, Berkeley, April 2006.

Computer Science Department, Helsinki University of Technology, August 2005.

Computer Science Department, University of Maryland, April 2005.

Department of Computer Sciences, University of California, Los Angeles, March 2005.

Center for Perceptual Systems, the University of Texas at Austin, April 2003.

Computer Science Department, Helsinki University of Technology, December 2000.

Department of Mathematics, King's College London, UK, July 1998.

Faculty of Industrial Engineering, Technion, Israel, June 1998.

Society of Computational Biology, The University of Texas at Austin, November 1997.

Department of Brain and Cognitive Sciences, MIT, April 1997.

Center for Vision and Image Science, University of Texas at Austin, November 1996.

Research Imaging Center, University of Texas Health Sciences Center at San Antonio, October 1996.

Department of Informatics, University of Buenos Aires, Argentina, May 1996.

Freshman honors seminar, The University of Texas at Austin, February 1996.

Neuroinformatics Laboratory, University of Bielefeld, Germany, May 1995.

Department of Psychology, Technical University of Braunschweig, Germany, May 1995.

Department of Computer Science, University of Southern California, March 1995.

Pittsburgh Supercomputing Center, February 1995.

Laboratory of Information Technology, Helsinki University of Technology, Finland, June 1994.

Centre for Neuro-Mimetic Systems, EPFL, Lausanne, Switzerland, March 1994.

School of Engineering and Research in Computer Science and Electronics (EERIE), Nimes, France, March 1994.

On Convergence-Zone Episodic Memory

Department of Informatics, University of Buenos Aires, Argentina, May 1996.

Laboratory of Information Technology, Helsinki University of Technology, Finland, June 1995.

Department of Cognitive Science, University of California, San Diego, April 1995.

Center for Neural Basis of Cognition, Carnegie Mellon University, February 1995.

On Parsing Sentences with Subsymbolic Neural Networks

Plenary talk at the *Annual Conference of the Italian Society of Philosophy of Language*, Noto, Italy, October 2002.

Invited talk at *Emergentist Approaches to Language: the 28th Carnegie Mellon Symposium on Cognition*, CMU, May 1997.

Invited talk at the *Workshop on Thought and Language*, Kyushu Institute of Technology, Japan, September 1997.

Department of Linguistics, The University of Texas at Austin, March 1999.

Center for Artificial Intelligence, ITESM, Monterrey, Mexico, November 1996.

Department of Linguistics, The University of Texas at Austin, January 1996.

On Processing Narratives with Subsymbolic Neural Networks

Invited talk at the *Third Twente Workshop on Language Technology*, University of Twente, the Netherlands, May 1992.

Invited talk at the *International Workshop on Fundamental Research for the Next Generation of Natural Language Processing*, ATR International, Kyoto, Japan, July 1991.

Department of Artificial Intelligence, Kyushy Institute of Technology, Japan, July 1991.

Human Interface Laboratories, Nippon Telegraph and Telephone, Yokosuka, Japan, July 1991.

On Subsymbolic Cognitive Science

Invited talk at the *21st Annual Conference of the Cognitive Science Society* (COGSCI-99), Vancouver, Canada, August 1999.

Cognitive Science Club, the University of Texas at Austin, November 1993.

Computer Science Department, University of Twente, the Netherlands, May 1992.

Computer Science Industrial Forum, the University of Texas at Austin, February 1992.

Cognitive Science Club, the University of Texas at Austin, January 1992.

Computer Sciences Department Visiting Committee, University of Texas at Austin, October 1990.

On Other Topics

"Utilizing AI to Support Admissions", Stanford University, December 2025.

"A Million Agents is All You Need", invited talk at Microsoft Ignite, San Francisco CA, November 2025.

"Surprising Synergies of Evolution and Self-Organization". Keynote at the *Workshop on Evolution and Self-organization, Genetic and Evolutionary Computation Conference*, Malaga, Spain, July 2025.

"Project Resilience", invited talk at the Workshop on AI for Agriculture — Shaping Standards for Smart Food Systems, AI for Good Global Summit, ITU United Nations, Geneva, Switzerland, July 2025.

"What Can Neuroevolution Tell Us About Neuroscience?" *IRCN and Chen Institute Joint Course on Neuroinspired Computation,*, International Research Center for Neurointelligence, The University of Tokyo, July 2025.

"Leveraging human expertise with machine discovery." Centrum Wiskunde & Informatica, Amsterdam, September 2023.

"Pandemic Resilience Use Case", Workshop on Building a Decision-augmentation Platform to Address Global Issues, AI for Good Global Summit, ITU United Nations, Geneva, Switzerland, July 2023.

"Performance Evaluation in the Real World: Challenges and Potential Solutions." Invited talk at the *Good Benchmarking Practices for Evolutionary Computation* workshop at the Genetic and Evolutionary Computation Conference (GECCO-2022), July 2022 (online).

"Detecting, Coping with, and Adapting to Changing Worlds". Invited talk at the *AAAI Spring Symposium on Designing Artificial Intelligence for Open Worlds*, Stanford, CA (online), March 2022.

"Evaluating Medical Aesthetics Treatments through Evolved Age-Estimation Models." Centene, Inc. (online), Aug 2021 (online).

"GRADE: Machine Learning Support for Graduate Admissions", Department of Physics, University of Maryland (online, with Austin Waters), December 2020.

"Operationalizing Evolutionary AI." Keynote at the INFORMS Regional Analytics Conference, Chicago IL, November 2019.

"Industrializing AI," IC2 Institute, the University of Texas at Austin, November 2018

"Massively Parallel Evolutionary Computation," Invited talk at the Hardware for Next Generation AI workshop of the The Electronics Resurgence Initiative conference, San Francisco, CA, July 2018.

"Harnessing Machine Creativity in Digital Marketing through Evolutionary Computation," Invited talk at the Empowers Marketers Workshop, Kyoto, Japan, July 2018.

"How Does Word Meaning Depend on Context?" Invited talk at the workshop on Cognitive Computation: Integrating Neural and Symbolic Approaches, *Neural Information Processing Systems conference* (NIPS 2016), Barcelona, Spain, December 2016.

"Grounding Meaning in Perceptual Representations," Invited talk at *Dagstuhl Seminar on Neural-Symbolic Learning and Reasoning*, September 2014

"Open-Ended Behavioral Complexity for Evolved Virtual Creatures." Invited talk at the *BEACON Congress*, Michigan State University, August 2013.

"Technological Innovation as Competitive Search." IBM Silicon Valley, April 2012 (jointly with Riitta Katila).

"Coevolution of Cooperative Behaviors in Simulated Predator & Prey Teams." Invited talk at the *Biocomplexity XI: The Evolution of Cooperation* Workshop, Indiana University, December 2010.

"Evolving Neural Network Controllers for Multilegged Robots," Department of Mechanical Engineering, Oregon State University, August 2010.

"Machines Gone Wild," Science Study Break presentation, the University of Texas at Austin, March 2010.

"Modeling Cortical Maps with *Topographica*." Glaser Lab, University of California, Berkeley, May 2006.

"Multiagent Learning Through Neuroevolution." Invited talk at the *Information Science and Technology workshop on Distributed Cognitive Systems Focused on Team and Multiagent Learning*, Cambridge, MA, June 2004.

"Topographica: Computational Modeling of Cortical Maps." Invited talk at the *Human Brain Project Annual Conference*, May 2003.

"Semantic Effect on Episodic Associations." Invited talk at the *Computational Neuropsychology Workshop*, Neural Information Processing Systems conference (NIPS'01), Whistler, Canada, December 2001.

"Semantic Effect on Episodic Associations." Department of Psychology, The University of Texas at Austin, September 2001.

Panel Presentations, Review Talks, and Demonstrations

Panelist at the "AI Show and Tell" panel with Marco Casalaina at Microsoft Ignite, San Francisco CA, November 2025.

Panelist at the "Innovation, creativity, and the potential of Generative AI" interactive Cognizant online panel (Yamjam) with Babak Hodjat, May 2024.

Panelist at the "Innovation, Research and Education for a Sustainable Tomorrow" workshop at the Bifrost Summit, Stanford University, March 2024.

Panelist at the "Building for a Sustainable Future" workshop at the Bifrost Summit, Palo Alto, CA, March 2024.

Panelist at the "Fall Virtual Conference," National Organization for Business and Engineering (NOBE) (online), October 2023.

Panelist at the "Superhuman AI: Fact or Fiction," Cognizant+Georgia Tech panel, Georgia Institute of Technology, Atlanta, GA, April 2023 (online).

Presentation at the "Patenting Artificial Intelligence Inventions" panel at the 2022 AUTM Annual Meeting, New Orleans, LA, Feb 2022.

Panel presentation at the "Learning to Learn" workshop at the International Conference on Learning Representations (ICLR-2021, Vienna, Austria; online), May 2021.

Panel presentation at the "AI For Good in Action: Crowdsourcing AI for Future Resilience, Part 3" workshop, organized by ITU and XPRIZE (online), May 2021.

Presentation at the "Strategies for Effectively Building, Deploying & Monitoring AI" panel at the Applied AI Virtual Summit, Austin, TX (online), May 2020.

Presentation at the "What is the killer application of GP?" panel at the Evostar Conference, Leipzig, Germany, April 2019.

Presentation at the "Symposium on Metalearning" panel at the *Neural Information Processing Systems Conference* (NIPS 2017), Long Beach, CA, December 2017.

Presentation at the "Symposium on Recurrent Neural Networks and Other Machines that Learn Algorithms" panel at the *Neural Information Processing Systems Conference* (NIPS 2016), Barcelona, Spain, December 2016.

"OpenNERO: a Game Platform for AI Research and Education" by Igor Karpov, John Sheblak, and Risto Miikkulainen (2008). Contributed demonstration at the *Artificial Intelligence and Interactive Digital Entertainment Conference* (AIIDE-2008, Stanford, CA), October 2008.

"NERO: Neuro-Evolving Robotic Operatives" by Igor Karpov, Thomas Nelson, Kenneth O. Stanley, and Risto Miikkulainen (2007). In *Video Program of the Twenty-Second AAAI Conference on Artificial Intelligence.*

"Topographica: Computational Modeling of Neural Maps" by James A. Bednar, Christopher Ball, Yoonsuck Choe, Julien Ciroux, Judah De Paula, Yiu Fai Sit, Jefferson Provost, and Risto Miikkulainen. Demonstration at the *Annual Meeting of the Society for Neuroscience*, October 2006.

"The NERO Machine Learning Game" by Kenneth O. Stanley, Igor Karpov, and Risto Miikkulainen. Contributed demonstration at the *Google Zeitgeist Conference*, Mountain View, CA, October 2006

"Real-time Interactive Learning in the NERO Video Game," by Kenneth O. Stanley, Igor Karpov, Risto Miikkulainen, and Aliza Gold. Intelligent Systems Demonstrations Program, *National Conference on Artificial Intelligence* (AAAI-2006), Boston, MA, July 2006.

"The NERO Video Game," by Kenneth O. Stanley, Igor Karpov, Risto Miikkulainen, and Aliza Gold. Contributed demonstration at the *Second Artificial Intelligence and Interactive Digital Entertainment Conference* (AIIDE-2006), Marina del Rey, CA, June 2006.

"Topographica: Computational Modeling of Cortical Maps," by James A. Bednar, Yoonsuck Choe, Judah De Paula, Risto Miikkulainen, Jefferson Provost, and Yiu Fai Sit. Invited demonstration at the NIMH Human Brain Project exhibit at the *Annual Meeting of the Society for Neuroscience*, November 2005.

"Real-time Learning in the NERO Video Game," by Kenneth O. Stanley, Ryan Cornelius, Risto Miikkulainen, Thomas D'Silva, and Aliza Gold. Contributed demonstration at the *First Artificial Intelligence and Interactive Digital Entertainment Conference* (AIIDE-2005, Marina del Rey, CA), June 2005.

"Topographica: Computational Modeling of Cortical Maps," by Risto Miikkulainen, James A. Bednar, Yoonsuck Choe, Judah De Paula, Jefferson Provost, and Tal Tversky. Invited demonstration at the *Human Brain Project Annual Conference*, April 2004.

"Topographica: Computational Modeling of Cortical Maps," by Risto Miikkulainen, James A. Bednar, Yoonsuck Choe, Judah De Paula, Jefferson Provost, and Tal Tversky. Invited demonstration at the *Human Brain Project Annual Conference*, May 2003.

"Topographica: Computational Modeling of Cortical Maps," by James A. Bednar, Yoonsuck Choe, and Risto Miikkulainen. Invited demonstration at the NIMH Human Brain Project exhibit at the *Annual Meeting of the Society for Neuroscience*, November 2002.

"Symbolic-Subsymbolic Hybrids?" Invited panel presentation at the *NIPS Workshop on Hybrid Neural Symbolic Integration*, December 1998.

"SOM Research in the US." Invited talk at *Workshop on Self-Organizing Maps,* (WSOM'97), Helsinki University of Technology, Finland, June 1997.

"Integrated Connectionist Models: Building AI Systems on Subsymbolic Foundations." Invited panel presentation at the *Sixth International Conference on Tools with Artificial Intelligence* (ICTAI-94), New Orleans, November 1994.

Podcasts

"Tekoäly: Ihmiskunnan tuho vai pelastus?" (in Finnish), Ilmiö Podcast with Tomi Tolonen, August 2025.

"Evolving Minds: Dr. Risto Miikkulainen on Creativity, Evolution, and the Next Wave of AI", Hidden States Podcast with Ron Green, April 2025.

"Truth, Power, and AI: Who Controls the Future?", Raion Podcast with Laurence Cohen, March 2025.

"The Exciting World of AI Research", The Influencer Podcast with Ana Huertas, March 2025.

"AI: Neural Netowrks, robots, and evolution" (in Finnish), Puheenaihe Podcast with Rami Kurimo, February 2025.

"AI Research, Neural Networks, Evolutionary Computation", Hrvoje Kukina Podcast, January 2025.

"Supply Chain Intelligence: Can AI Help You Manage Your Supply Chain?", Bloomberg webinar with Matt Ekroth, November 2024.

"Evolutionary AI is a Game Changer!", Gen Z Diplomat Podcast with Ayush Prakash, October 2024.

"I'd Rather Trust an AI That Knows Its Power and Chooses Not to Use It" AIM podcast on Simulated Reality with Kashyap Raibagi, September 2024.

"AI in Action", The Alldus Podcast with John Paul Valentine, September 2024.

"Academia Changes One Grave at a Time but AI will Reshape everything", In YOUth We Trust Podcast with Prashant Raizada, July 2024.

"Advancing business decision-making with Evolutionary AI", Times of India webinar/podcast with Amir Banifatemi, Babak Hodjat, Sujit John, and Akhil George, July 2024.

"Fueling and Riding the AI Wave", Austin Next Podcast with Jason Scharf, August 2023.

"A Conversation on Neuroscience", Pangburn Universe with Thomas Panter, March 2023.

The Greatest Investors Podcast with Diogo Marques, February 2023.

"The Biologically-Inspired Algorithms No One is Talking About", Edge of Chaos Podcast with Carlos Farias, January 2023.

"What are "Other" Minds? Neuroevolution of Past, Present & Future Minds", Mind-Body Solution Podcast with Tevin Naidu, February 2022.

"AI: Industry and Academia", Gen Ed Podcast with Alana Schwartz and Louis F. Y., October 2021.

"Mitä Tekoäly Voi Oppia Evoluutiosta?", Futucast podcast with William von der Pahlen and Isak Rautio, July 2021

"Discussion with the Winner of Xprize Pandemic Response Challenge", The Pulse of AI Podcast with Nuria Oliver and Jason Stoughton, May 2021.

"Xprize Covid Challenge Winners (Part 1)", The Pulse of AI Podcast with Mitja Lustrek and Jason Stoughton, May 2021.

""AI Understood", Finlandia Foundation podcast "My American Dream" with Michel Wendell, April 2021.

"Neuroevolution and evolutionary computation", Lex Fridman Podcast, April 2021.

"Evolutionary Computation", The Biotech Podcast with Harry Blakiston Houston, April 2021

"Artificial Intelligence Revs Up Evolution's Clock", College of Natural Sciences podcast with Marc G. Airhart and Cason Hunwick, October 2020.

"Trustworthiness in AI", The Pulse of AI podcast with Joydeep Ghosh and Jason Stoughton, September 2020.

"AutoML and the Future of AI", The Pulse of AI podcast with Quoc Le and Jason Stoughton, September 2020.

"Deep Dive Discussion into Evolutionary AI", The Pulse of AI podcast with Stephanie Forrest and Jason Stoughton, September 2020.

"The Evolution of Evolutionary Algorithms", Sam Charrington podcast, April 2020

"AI, Adversity, and a New Era of Work", Resilient Us Podcast with Nathan Eckman, September 2019.

"Evolutionary AI", Artificially Intelligent Podcast, August 2018.

"Discovering Novel Solutions Via Evolutionary Optimization", Finding Genius Podcast with Richard Jacobs, August 2018.

"Evolutionary Computation", Data Skeptic Podcast with Kyle Polich, February 2018.

"Evolutionary Algorithms in Machine Learning", This Week in Machine Learning podcast with Sam Charrington, September 2017.

"Latest developments in the field of AI and how it is changing the world", Superdatascience podcast with Kirill Eremenko, July 2017.

"Evolution of Neural Networks and Artificial Intelligence" and "The Future of Neural Networks and AI.", The Promise of Tomorrow with Colonel Mason, August 2016.

"Evolutionary Computation and Making Robots Think for Themselves", O'Reilly Radar Podcast with David Beyer, February 2016.

Research Visits

Department of Mathematics, Helsinki University of Technology, Finland, June – August, 1999, and May – July, 1998.

Department of Computer Sciences, San Luis National University, San Luis, Argentina, May – June, 1996.

Max-Planck-Institute für Psycholinguistik, Nijmegen, the Netherlands, May 1992 and May 1991.

Computer Science Department, University of Twente, the Netherlands, May 1992.

Tutorials and Short Courses

"Neuroevolution of Intelligent Agents" Tutorial at *The International Joint Conference on Artificial Intelligence* (IJCAI-2025, Montreal, Canada), July 2025.

"Evolution of Neural Networks." Tutorial at the *Genetic and Evolutionary Computation Conference*: GECCO-2025 (Malaga, Spain); GECCO-2024 (Melbourne, Australia; online); GECCO-2023 (Lisbon, Portugal); GECCO-2022 (Boston, MA; online); GECCO-2021 (Lille, France; online); GECCO-2020 (Cancun, Mexico; online); GECCO-2019 (Prague, Czech Republic); GECCO-2018 (Kyoto, Japan); GECCO-2017 (Berlin, Germany); GECCO-2016 (Denver, CO); GECCO-2015 (Madrid, Spain); GECCO-2014 (Vancouver, Canada); GECCO-2013 (Amsterdam, the Netherlands); GECCO-2011 (Dublin, Ireland); GECCO-2010 (Portland, OR); GECCO-2009 (Montreal, Canada); GECCO-2008 (Atlanta, GA); GECCO-2007 (London, UK); GECCO-2006 (Seattle, WA); GECCO-2005 (Washington, DC).

"Neuroevolution." Tutorial at *The International Joint Conference on Neural Networks* (IJCNN-2025, Rome, Italy), June 2025.

"Neuroevolution." Tutorial at *The 2024 Conference on Artificial Life* (Alife-2024, Copenhagen, Denmark), July 2024.

"Evolution of Neural Networks." Tutorial at the *Advanced Course on Data Science and Machine Learning* (ACDL2020), Siena, Italy (online), July 2020.

"Evolution of Neural Networks." Tutorial at the *Congress on Evolutionary Computation* (CEC-2021), Krakow, Poland (online), June 2021; (CEC/WCCI-2020), Glasgow, Scotland (online), July 2020; (CEC-2019), Wellington, New Zealand, June 2019.

"Evolution of Neural Networks." Tutorial at the *IEEE Symposium Series on Computational Intelligence*, Honolulu, HI, December 2017.

"Evolution of Neural Networks." Tutorial at the *Artificial Life Conference*, Lyon, France, September 2017; New York, NY, August 2014; East Lansing, MI, July 2012.

"Neuroevolution Reinforcement Learning." Tutorial at the *AAAI Conference on Artificial Intelligence*: AAAI-2017 (San Francisco, CA); AAAI-2015 (Austin, TX)

"Evolving Neural Networks." Tutorial at the *2015 IEEE Conference on Computational Intelligence and Games*, Tainan, Taiwan, August 2015.

"Evolving Neural Networks." Tutorial at the *Machine-Learning Summer School*, Austin, TX, January 2015.

"Evolving Neural Networks." Invited tutorial at the *Theory and Practice of Natural Computation Conference*, Caceres, Spain, December 2013

"Evolving Neural Networks." Tutorial at the *International Joint Conference on Artificial Neural Networks*, Dallas, TX, August 2013; San Jose, CA, July 2011

"Evolving Neural Networks." Tutorial at the *World Congress on Computational Intelligence*, Brisbane, Australia, June 2012.

"Evolving Neural Networks." Tutorial at the *BEACON Congress*, Michigan State University, August 2010.

"Natural Language Processing with Symbolic Neural Networks." A 10-hour course at the International PhD School in Formal Languages and Applications, Rovira i Virgili University, Tarragona, Spain, September 2004, 2005, 2006.

"Artificial Intelligence." A 40-hour lecture course at the Department of Informatics, San Luis National University, San Luis, Argentina, June 3rd – 14th, 1996.

"Evolving Neural Networks with Genetic Algorithms." A 40-hour lecture course at the Department of Informatics, San Luis National University, San Luis, Argentina, May 20th – 31st, 1996.

"Progress in Self-Organizing Feature Maps." A short course presented at the Phoenix Corporate Research Laboratories, Motorola Inc, Phoenix AZ, July 7th, 1995.