Publikationer

Minimal Neural Network Models for Permutation Invariant Agents
Winther Pedersen, J. & Risi, S., 9 jul. 2022.

A Unified Substrate for Body-Brain Co-evolution

HyperNCA: Growing Developmental Networks with Neural Cellular Automata

Mario Plays on a Manifold: Generating Functional Content in Latent Space through Differential Geometry

Physical Neural Cellular Automata for 2D Shape Classification

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Variational Neural Cellular Automata

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Safer Reinforcement Learning through Transferable Instinct Networks

Evolving and Merging Hebbian Learning Rules: Increasing Generalization by Decreasing the Number of Rule
Growing Simulated Robots with Environmental Feedback: an Eco-Evo-Devo Approach
Helmut Hauser, Walker, K. E. & Risi, S., 10 jul. 2021, I: GECCO.

Utopian or Dystopian?: Using a ML-Assisted image generation game to empower the general public to envision the future

Regenerating Soft Robots through Neural Cellular Automata

Player-AI Interaction: What Neural Network Games Reveal About AI as Play

EvoCraft: A New Challenge for Open-Endedness

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Fast Game Content Adaptation Through Bayesian-based Player Modelling

Improving Object Detection in Art Images Using Only Style Transfer

Rapid Risk Minimization with Bayesian Models Through Deep Learning Approximation

Testing the Genomic Bottleneck Hypothesis in Hebbian Meta-Learning

Meta-Learning through Hebbian Plasticity in Random Networks
Najarro, E. & Risi, S., 7 dec. 2020, I: Advances in Neural Information Processing Systems. 33

Squeezer - A Tool for Designing Juicy Effects

iNNk: A Multi-Player Game to Deceive a Neural Network

Adapting to a changing environment: Simulating the effects of noise on animal sonification
Safe Reinforcement Learning through Meta-learned Instincts

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Safer reinforcement learning through evolved instincts

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CPPN2GAN: Combining Compositional Pattern Producing Networks and GANs for Large-Scale Pattern Generation

Crea.Blender: A Neural Network-Based Image Generation Game to Assess Creativity

Deep learning for procedural content generation

Finding Game Levels with the Right Difficulty in a Few Trials through Intelligent Trial-and-Error

From Chess and Atari to StarCraft and Beyond: How Game AI is Driving the World of AI
Risi, S. & Preuss, M., 2020, I: KI - Künstliche Intelligenz. 34, 1, s. 7-17 11 s.

Increasing generality in machine learning through procedural content generation

Interactive Evolution and Exploration within Latent Level-Design Space of Generative Adversarial Networks

Learning a Behavioral Repertoire from Demonstrations
Video Game Description Language Environment for Unity Machine Learning Agents

Towards Continual Reinforcement Learning through Evolutionary Meta-Learning

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Blood bowl: A new board game challenge and competition for AI

Deep learning for video game playing

Deep Neuroevolution of Recurrent and Discrete World Models

MAP-Elites for noisy domains by adaptive sampling

When Are We Done with Games?

Evolution of Fin Undulation on a Physical Knifefish-inspired Soft Robot

Towards a Plant Bio-Machine
Nichele, S., Risi, S., Tufte, G. & Beloff, L., 8 feb. 2018, IEEE Alife conference (SSCI) proceedings. IEEE, s. 1-8 8 s. 17544442

A Robot to Shape your Natural Plant: The Machine Learning Approach to Model and Control Bio-Hybrid Systems

Automated Curriculum Learning by Rewarding Temporally Rare Events
Justesen, N. & Risi, S., 2018, 2018 IEEE Conference on Computational Intelligence and Games. IEEE, s. 293-300 8 s.

Blood Bowl: The Next Board Game Challenge for AI
Born to learn: The inspiration, progress, and future of evolved plastic artificial neural networks
Soltoggio, A., Stanley, K. O. & Risi, S., 2018, I: Neural Networks. 108, s. 48-67

Collaborative interactive evolution in minecraft

Deep interactive evolution

EuroGP 2018 panel debate: genetic programming in the era of deep neural networks
Machado, P., O'Reilly, U-M., Gori, M. & Risi, S., 2018, I: ACM SIGEVOlution. 11, 2, s. 3-6 4 s.

Evolutionary computation and games tutorial

Evolving in-game mood-expressive music with MetaCompose

Evolving Mario Levels in the Latent Space of a Deep Convolutional Generative Adversarial Network

Explainable AI for designers: A human-centered perspective on mixed-initiative co-creation

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Illuminating Generalization in Deep Reinforcement Learning through Procedural Level Generation

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Towards an experiment on perception of affective music generation using MetaCompose

Primal-improv: Towards co-evolutionary musical improvisation

Continual Online Evolutionary Planning for In-Game Build Order Adaptation in StarCraft
Evolving Simulated Modular Robots

Affective evolutionary music composition with MetaCompose
Scirea, M., Togelius, J., Eklund, P. & Risi, S., 12 jun. 2017, I: Genetic Programming and Evolvable Machines. s. 1-33

Evolution and Morphogenesis of Simulated Modular Robots: A Comparison Between a Direct and Generative Encoding

1D Printing of Recyclable Robots

A deep learning / neuroevolution hybrid for visual control

Automating the Incremental Evolution of Controllers for Physical Robots

CA-NEAT: Evolved Compositional Pattern Producing Networks for Cellular Automata Morphogenesis and Replication

Can You Feel It?: Evaluation of Affective Expression in Music Generated by MetaCompose

Continual and One-Shot Learning Through Neural Networks with Dynamic External Memory

DLNE: A hybridization of deep learning and neuroevolution for visual control
Poulsen, A. P., Thorhauge, M., Funch, M. H. & Risi, S., 2017, Computational Intelligence and Games (CIG), 2017 IEEE Conference on. IEEE Press, s. 256-263 8 s.

Interactive Evolution of Complex Behaviours Through Skill Encapsulation

Learning macromanagement in starcraft from replays using deep learning
Justesen, N. & Risi, S., 2017, Computational Intelligence and Games (CIG), 2017 IEEE Conference on. IEEE, s. 162-169 8 s.

Playing Multi-Action Adversarial Games: Online Evolutionary Planning versus Tree Search

Toward energy Autonomy in heterogeneous Modular Plant-Inspired Robots through Artificial evolution
Generating Artificial Plant Morphologies for Function and Aesthetics through Evolving L-Systems

Creative Generation of 3D Objects with Deep Learning and Innovation Engines

MetaCompose: A Compositional Evolutionary Music Composer

Accelerating the Evolution of Cognitive Behaviors Through Human-Computer Collaboration

Artefacts: Minecraft meets Collaborative Interactive Evolution
Patrascu, C. & Risi, S., 2016, Proceedings of the 2016 IEEE Conference on Computational Intelligence and Games. IEEE, s. 349-356

Automatic Evolution of Multimodal Behavior with Multi-Brain HyperNEAT

Breeding a Diversity of Super Mario Behaviors Through Interactive Evolution

Continual Learning through Evolvable Neural Turing Machines
Lüders, B., Schläger, M. & Risi, S., 2016. 5 s.

EvoCommander: A Novel Game Based on Evolving and Switching Between Artificial Brains
Jallov, D., Risi, S. & Togelius, J., 2016, I: IEEE Transactions on Computational Intelligence and AI in Games. 9, 2, s. 181-191 12 s.

Evolving Neural Turing Machines for Reward-based Learning

Interactive Super Mario Bros Evolution

Towards Adaptive Evolutionary Architecture

WebAL Comes of Age: A review of the first 21 years of Artificial Life on the Web

Darwin’s Avatars: a novel Combination of Gameplay and Procedural Content Generation
BrainCrafter: An investigation into human-based neural network engineering
Piskur, J., Greve, P., Togelius, J. & Risi, S., 1 maj 2015, Evolutionary Computation (CEC), 2015 IEEE Congress on. IEEE, s. 2199-2206 8 s.

Interactive evolution of levels for a competitive multiplayer FPS
Olsted, P. T., Ma, B. & Risi, S., 1 maj 2015, Evolutionary Computation (CEC), 2015 IEEE Congress on. IEEE, s. 1527-1534 8 s.

DrawCompileEvolve: Sparking interactive evolutionary art with human creations

Evolving self-organizing simulated plant-inspired robots

Flora Robotica – Mixed Societies of Symbiotic Robot-Plant Bio-Hybrids

Interactively Evolving Compositional Sound Synthesis Networks

Investigating MCTS Modifications in General Video Game Playing
Frydenberg, F., Andersen, K., Risi, S. & Togelius, J., 2015, Proceedings of the 2015 IEEE Conference on Computational Intelligence and Games. IEEE Computer Society Press, s. 107-113

Monte-Carlo Tree Search for Simulated Car Racing

Neuroevolution in Games: State of the Art and Open Challenges
Risi, S. & Togelius, J., 2015, I: I E E E Transactions on Computational Intelligence and A I in Games. 9, 1, s. 25-41 17 s.

Petalz: Search-based Procedural Content Generation for the Casual Gamer

Lessin, D. & Risi, S., 2015, Proceedings of the European Conference on Artificial Life (ECAL) 2015. MIT Press, s. 604–611

An Anarchy of Methods: Current Trends in How Intelligence Is Abstracted in AI
Lehman, J., Clune, J. & Risi, S., 2014, I: I E E E Intelligent Systems. 29, 6, s. 56-62

Automatically Categorizing Procedurally Generated Content for Collecting Games
Guided Self-organization in Indirectly Encoded and Evolving Topographic Maps

Script-and Cluster-based UCT for StarCraft

Single-unit pattern generators for quadruped locomotion

Generating Flower Images and Shapes with Compositional Pattern Producing Networks

A Compiler for CPPNs: Transforming Phenotypic Descriptions Into Genotypic Representations
Risi, S., 2013, 2013 AAAI Fall Symposium Series - How Should Intelligence be Abstracted in AI Research.. 7 s.

Confronting the challenge of learning a flexible neural controller for a diversity of morphologies
Risi, S. & Stanley, K. O., 2013, Proceeding of the fifteenth annual conference on Genetic and evolutionary computation conference. Association for Computing Machinery, s. 255-262 8 s.

Encouraging reactivity to create robust machines
Lehman, J., Risi, S., D’Ambrosio, D. & Stanley, K. O., 2013, I: Adaptive Behavior. 21, 6, s. 484-500

Ribosomal robots: Evolved designs inspired by protein folding
Risi, S., Cellucci, D. & Lipson, H., 2013, Proceeding of the fifteenth annual conference on Genetic and evolutionary computation conference: GECCO ’13. Association for Computing Machinery, s. 263-270 8 s.

An enhanced hypercube-based encoding for evolving the placement, density, and connectivity of neurons
Risi, S. & Stanley, K. O., 2012, I: Artificial Life. 18, 4, s. 331-363 33 s.

A unified approach to evolving plasticity and neural geometry
Risi, S. & Stanley, K. O., 2012, Neural Networks (IJCNN), The 2012 International Joint Conference on. s. 1-8 8 s.

Combining Search-Based Procedural Content Generation and Social Gaming in the Petalz Video Game.

Multirobot behavior synchronization through direct neural network communication

On the Benefits of Divergent Search for Evolved Representations

Enhancing es-hyperneat to evolve more complex regular neural networks

Task switching in multirobot learning through indirect encoding
Evolving plastic neural networks with novelty search
Risi, S., Hughes, C. E. & Stanley, K. O., 2010, I: Adaptive Behavior. 18, 6, s. 470-491 22 s.

Evolving policy geometry for scalable multiagent learning

Evolving the placement and density of neurons in the hyperneat substrate

Indirectly encoding neural plasticity as a pattern of local rules

How novelty search escapes the deceptive trap of learning to learn

Visualization and clustering of tagged music data

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