

CEC-XX Evolutionary Computing Application in Hardware

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Evolvable systems encompass understanding, modelling and applying biologically inspired mechanisms to physical systems. Application areas for bio-inspired algorithms include the creation of novel physical devices/systems, novel or optimised designs for physical systems and for the achievement of adaptive physical systems. Having showcased examples from analogue and digital electronics, antennas, MEMS chips, optical systems as well as quantum circuits in the past, we are looking for papers that apply techniques and applications of evolvable systems to these hardware systems, and in particular this year looking for papers in the areas of evolutionary robotic and evolutionary many-core system.

Scope and Topics

The aim of this special session is to provide a forum for the presentation of the latest data, results, and future research directions on bio-inspired computing and hardware. Headline topics are evolvable systems techniques, bio-inspired computation with materials and engineering physical devices, evolutionary many-core systems and evolutionary robotics. The special session invites submissions in any of the following areas:

- Hardware system optimisation
- Learning and adaptation
- Cooperation and competition
- Co-evolution of robot morphologies
- Real-world applications
- Self-reconfigurable systems
- Adaptive systems
- Self-repairing systems
- Fault tolerant systems
- Autonomous systems
- Specialised hardware
- Computational hardware and materials
- Self-adaptation
- Self-monitoring
- Self-testing