2020 IEEE International Conference on Evolvable Systems (ICES)
From Biology to Hardware (and back!)

The IEEE International Conference on Evolvable Systems (IEEE ICES) has been held, uninterrupted, since 1995 and in 2013 evolved from ICES to IEEE ICES. Following on from the success in previous years, ICES will continue to be part of the successful IEEE Symposium Series on Computational Intelligence, providing the possibility for increased interaction between ICES and the other symposiums and workshops.

Evolvable systems encompass understanding, modelling and application of 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, the IEEE ICES has become the leading conference for showcasing techniques and applications of evolvable systems.

Topics include but are not limited to:

Evolvable Systems Techniques:

- Intrinsic/Extrinsic/Mixtrinsic Evolution
- On-chip Bio-inspired Approaches
- Autonomous Systems
- Self-reconfigurable and Adaptive Systems
- Novel Evolvable Hardware Architectures (e.g. FPGAs, FPAAs)
- Self-repairing, Fault-tolerant Systems
- Self-monitoring and Self-testing
- Electronic Circuit Synthesis and Optimization
- Artificial Immune Systems
- Artificial Generative Development
- Formal Hardware Models
- Bio-inspired Modeling

Evolvable Systems Applications:

- Intrinsic Fault-tolerance
- Sensor Design
- Antenna Design
- Hardware System Optimization
- Analogue & Digital Electronic Design Optimization (Topology & Parameters)
- Evolutionary Robotics
- Autonomic and organic computing
- DNA Computing
- MEMS and nanotechnology
- Quantum computing
- Machine Vision
- Medical Diagnosis
- Mechanical Design Optimization (Bridges, Buildings, Spacecraft, Machines, Lenses, Solar Cells)

Special Sessions

Evolutionary Systems for Semiconductor Design, Simulation and Fabrication (contact: amt@ohm.york.ac.uk)
Evolutionary Robotics (contact: jimtoer@ifi.uio.no or kyrrehg@ifi.uio.no)
Evolutionary Substrates for Artificial Intelligence and Unconventional Computing
(contact: Stefano.Nichele@hioa.no or martin.trefzer@york.ac.uk)

Please forward your special session proposals to Conference Co-Chairs.

Conference Co-Chairs

Andy M. Tyrrell, University of York, UK
Martin A. Trefzer, University of York, UK