

EVOLUTIONARY COMPUTER VISION

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Computer vision is a major unsolved problem in computer science and engineering. Over the last decade there has been increasing interest in using evolutionary computation approaches to solve vision problems. Computer vision provides a range of problems of varying difficulty for the development and testing of evolutionary algorithms. There have been a relatively large number of papers in evolutionary computer vision in recent CEC and GECCO conferences.

The proposed special session aims to bring together theories and applications of evolutionary computation to computer vision and image processing problems.

Topics

- New theories and methods in different EC paradigms for computer vision and image processing
 - Evolutionary algorithms such as genetic algorithms, genetic programming, evolutionary strategies and evolutionary programming
 - Swarm Intelligence methods such as particle swarm optimisation, ant colony optimisation, and artificial bee colony optimisation
 - Emergent, metaheuristics and other EC approaches such as learning classifier systems, differential evolution, artificial immune systems, multi-objective optimisation, hybrid search and memetic computing, transfer learning and domain adaptation, deep learning and kernel methods, hyper-heuristic techniques
 - Cross-fertilization of evolutionary computation with other techniques such as neural networks including deep learning and fuzzy systems
- Applications in computer vision and image processing
 - Edge detection in noisy images

- Image segmentation in biological images
- Automatic feature extraction, construction and selection in complex images
- Object identification and scene analysis for medical applications
- Object detection and classification in security scenarios
- Handwritten digit recognition and detection
- Vehicle plate detection
- Face detection and recognition
- Texture image analysis
- Automatic target recognition in military services
- Gesture identification and recognition
- Robot vision