

## Special Session on Concurrent Approaches to Collaboration in Evolutionary Computation

### *Organisers*

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### *Important Dates*

#### **Paper Submission**

1st November 2008

#### **Notification of Acceptance**

16th January 2009

#### **Final Paper Submission**

16th February 2009

### *Submissions*

Please follow the submission guidance given on the CEC 2009 website at [www.cec-2009.org](http://www.cec-2009.org)

When submitting, please select the special session on 'Concurrent Approaches to Collaboration in Evolutionary Computing'

*We aim to provide a forum for the cross-fertilisation of concurrency ideas, tools and techniques for collaborative behaviours amongst researchers from different areas of evolutionary computation.*

The study of concurrency encompasses a wide range of techniques including the use of concurrent programming languages and algorithms and the distribution of programs across multiple hosts. Concurrency is appealing in nature-inspired computing for both philosophical and practical reasons. The world around us is highly concurrent, so concurrent programming techniques provide a natural way to model entities and interactions in the real world. Evolutionary computing and bio-inspired agent-based techniques can be very resource intensive especially for large problems. Concurrency can enable us to harness the huge computing power available today in multi-core processors, distributed PC clusters and other parallel systems.

Many bio-inspired computing approaches, such as ants and swarms, make use of interacting and collaborative elements that produce emergent behaviours to perform their allotted tasks. These approaches are ideally suited to exploit the power of concurrency to produce performance gains or tackle intensive problems. Their constituent elements can often be parallelised or distributed, with communication between elements occurring where necessary. The concurrency techniques employed to achieve this are often generic, applicable to many different collaborative evolutionary computing techniques.

We will be interested in receiving both technical and position papers that *make use of concurrent languages, algorithms or distributed techniques to aid collaborative behaviours* in any relevant CEC subject area. Such areas might include, but are not restricted to:

- Artificial life models
- Bio-inspired agent-based techniques
- Co-evolution
- Evolutionary design
- Evolutionary robotics
- Swarm intelligence