

## **Evolving controllers for simulated car racing using differential evolution**

### **Abstract**

This paper presents an initial approach for creating autonomous controllers for the car racing game using a hybrid technique. The Differential Evolution (DE) algorithm is combined with Feed-forward Artificial Neural Networks (FFANNs) to generate the required intelligent controllers in a well-known car racing game, namely The Open Racing Car Simulator (TORCS). TORCS is used as a platform in most of the IEEE conference competitions. The main objective of this research is to test the feasibility of the DE implementation in TORCS platform. The literature showed that the application of DE in Real Time Strategy game returned promising results in evolving the required strategy gaming controllers. Interestingly, there is still no study thus far that has been conducted in applying DE into TORCS game platform. This research result shows that DE performed well in TORCS even though a very simple fitness function was used. This indicates that DE has well-tuned the neural network weights to generate optimal and sub-optimal controllers in TORCS.