SPEAKER:

CCNR - Centre for Computational Neuroscience and Robotics University of Sussex - UK

DATE:

Thursday, the 7th of April, 2011

TIME:

15:15 - 16:15

LOCATION:

Heriot-Watt University, Earl Mountbatten Building; room 3.02

TITLE:

Synchronisation, networks of coupled phase oscillators and behaviour: applying neurodynamics to evolutionary robotics.

ABSTRACT:

I will present one of the first applications of an extended version of a widely known neural network model of phase interacting oscillators, the Kuramoto model, to two different evolutionary robotics tasks commonly studied for attesting minimally cognitive behaviours. I will stress that exploring the simulated brain/body/environment system could contribute to unveil important mechanisms of the neural system which may not be easily identifiable in living organisms. Moreover, the research outcomes could inspire the design of new robotic controllers as well as shed light into many different research areas, from the comprehension of the role of oscillatory properties in some diseases to the establishment of new parallel computing architectures.

Moioli, R.C., Vargas, P. A., Husbands, P. "Exploring the Kuramoto Model of Coupled Oscillators in Minimally Cognitive Evolutionary Robotics Tasks". IEEE World Congress on Computational Intelligence 2010, WCCI 2010, Barcelona, Spain (received the "IEEE Congress on Computational Intelligence-Best Student Paper Award for 2010").