CASUAL OR PART-TIME RESEARCH ASSISTANTS REQUIRED –
2 Positions

Project 1: Modelling Curious Agents as an Anomaly Detection Approach to
Network Intrusion Detection

- Hours: Up to 20 hours per week, starting early 2010.
- Contact: Dr Kathryn Merrick (k.merrick@adfa.edu.au) or Dr Kamran Shafi (k.shafi@adfa.edu.au)
- Required Skills:
  - Java/C/C++ Programming
  - Research experience
  - Background in artificial intelligence/machine learning, computer security/intrusion detection
- Project description:

With the proliferation of information technology in our everyday lives comes the need for increased computer security to protect the computer networks used in government organisations, businesses and private homes. Intrusion detection systems protect networks by identifying anomalies and attacks so that appropriate action can be taken. This project will develop biologically-inspired approaches to network intrusion detection using curious agents. Curious agents use embedded online, single-pass, unsupervised learning algorithms to analyse data. They thus have the potential for real-time, adaptive network traffic analysis. The models will be analysed and compared using common benchmark datasets.

Project 2: Learning models for curious, reconfigurable robots

- Hours: Up to 20 hours per week, starting early 2010
- Contact: Dr Kathryn Merrick (k.merrick@adfa.edu.au)
- Required Skills:
  - Java/C/C++ Programming
  - Research experience
  - Background in artificial intelligence/machine learning/robotics
- Project description:

This project will develop software architectures for reconfigurable robots using the Lego Mindstorms NXT platform. The architectures will combine machine learning with computational models of motivation such as curiosity. Innovative combinations of different classes of machine learning with internal motivation will result in robots that can proactively engage in search, experimentation or mimicry to explore the relationship between their changing structure and what they can do. Curious, reconfigurable robots promise functional, economic and creative advantages by permitting engineering versatility, flexibility and robustness through adaptive behaviour. They will form a valuable part of future, intelligent environments in homes or industry.

Please email your application to the addresses above, including a one page cover letter and your CV.