Coursework 2: Non-Human Primate Social Affiliation

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1 Introduction

All of your courseworks are designed primarily to give you experience in developing intelligent control and/or cognitive systems. This course also gives you experience and feedback in writing about research. However, this year we are attempting to make the second and third coursework lighter-touch. Therefore, the writeup for this submission should be at *most* two pages, including the figures, and does not need to have all the normal sections for an academic paper.

2 Approach

There are many different types of social simulation, but in keeping with the emphasis of ICCS, you will be doing a *spatial simulation*, where you are meant to be simulating some approximation of:

- real time,

- real space,

- real animal capacities, e.g. motion, perception, and metabolism.

The basic task is to extend a replication of the results reported by Hemelrijk (2002). A replication means you should briefly review the scientific reason for the model as well as checking the model's outcomes. In this case, we have given you the code for an existing replication (see Moodle). If you want more information than you had in lecture about replication, you may want to read King (1995) or Bryson et al. (2007). Note that more information on the replication code itself is available from the DomWorld replication home page.

The extension suggested is to replicate one of the social bonding behaviours described by (Silk, 2002).

Note that learning to reason about how agents move in virtual space will help you with the game-AI in CW3. This CW2 option also helps you learn about social behaviour and outcomes.

3 Results

In this coursework, please just document one hypothesis you had, and show one graph testing that hypothesis. You might want to state your hypothesis and where it came from as an Introduction, and explain your code briefly in the Approach.

NetLogo provides a tool for running experiments (BehaviourSpace) and more tools for drawing graphs. Thus it is pretty easy to get NetLogo to run experiments for you, if you can think of parameters you might like to vary or code you might want to add that would be experimentally interesting.

With respect to your own results, if you describe a reasonably-well working system in a comprehensible manner you will pass. If you can justify your hypothesis from the literature (e.g. say which figure you are trying to replicate, and what you thought was needed to do so) you will get at least 55. Getting a mark over 70 requires demonstrating insight, creativity and/or understanding that goes beyond the basics laid out for you in this document. For example, you could describe further experiments you would like to do if you had time.

4   Discussion and Conclusions

Doing a little more statistical analysis is another way to get over 70. You aren't however obliged to come to any conclusions, just to show that you can design and execute an experiment in NetLogo that extends the replication you were given in a sensible way.

References

Bryson, J. J., Ando, Y., and Lehmann, H. (2007). Agent-based models as scientific methodology: A case study analysing primate social behaviour. *Philosophical Transactions of the Royal Society, B — Biology*, 362(1485):1685–1698.

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King, G. (1995). Replication, replication. *PS: Political Science and Politics*, XXVIII(3):443–499. with comments from nineteen authors and a response, "A Revised Proposal, Proposal,".

Silk, J. B. (2002). The form and function of reconciliation in primates. *Annual Review of Anthropology*, 31:pp. 21–44.