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Computational Modelling of the Honeybee Brain

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Abstract

The brain of the honeybee is a tremendous feat of engineering, using less than 1 million neurons to implement sophisticated behaviours that we would normally describe as 'cognitive' if they were exhibited by ourselves or other primates. The Green Brain project aims to capitalise on this combination of sophistication and manageable size to build the first complete simulation model of the brain of any organism. The Green Brain will run on graphical processing hardware that has become established for scientific computing, and control an autonomous flying robot in real time. In this talk I will summarise some of the cognitive abilities of the honeybee, and present preliminary results from the Green Brain project.