



**UNIVERSITY OF
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19th April, 2012
Department of Neuroscience
Brown University

Dear Search Committee,

**Re: Assistant Professor in computational neuroscience
– reference for Vassilis Cutsuridis**

I am delighted to give a reference for Vassilis Cutsuridis. He was a postdoc with me for three years from October 2006 to October 2009. During his time with me he proved himself to be an energetic, versatile and able researcher.

His major project in my lab was to develop a detailed microcircuit model of the CA1 area of the hippocampus. Our main aim was to try to understand the functional roles of different inhibitory neurons. This required Vassilis to absorb a vast array of published experimental and modelling work on the hippocampus, which he did very quickly. Based on this he developed compartmental cell models for pyramidal cells and four types of inhibitory interneurons and coded and implemented in the NEURON simulator a CA1 network model using these cells. We used this model successfully to demonstrate storage and recall of information in the network during combined theta/gamma oscillations. From this work, Vassilis became very interested in the specifics of synaptic plasticity and he used a biophysical model of STDP to study in detail the effect of inhibition on synaptic learning mediated by STDP learning rules. All this work has been presented at international conferences: posters at CNS*2007 in Toronto and CNS*2009 in Berlin, and two talks at ICANN*2008 in Prague, plus other workshops. A major paper on the CA1 microcircuit is published in the journal *Hippocampus* and the STDP work has appeared in *Neural Network World*. He continued this work on the hippocampus and the effects of inhibition on STDP while working as a visiting scholar in the Centre for Memory and Brain at Boston University. Several further journal publications have resulted.

Importantly, Vassilis is very proactive in general research-oriented academic life. While with me he initiated and organised extremely well attended workshops on neuronal microcircuits at CNS*2007, ICANN*2008 and CNS*2009. He was instrumental in securing a deal with the publisher Springer to edit a book on hippocampal microcircuits. Acting as coeditor, along with myself and two other colleagues, this book attracted premier international authors from both experimental and computational hippocampal neuroscience to contribute chapters. It appeared in press in February, 2010. He also initiated and acted as coeditor for a special issue of

the Neural Networks journal on neural microcircuits, which appeared in 2009. In addition, he played a key role in mentoring a PhD student who was working on the same research project.

During his PhD studies and subsequently as a postdoc, Vassilis has gained a wide experience of studying brain function in different areas, ranging from basal ganglia to hippocampus to neocortex, at many different levels of detail, from networks to the synaptic, subcellular level. He has developed computational models ranging from relatively abstract network models to detailed single cell compartmental models. He has excellent written and aural communication skills and is able to converse easily and effectively with experimental neuroscientists as well as fellow computational modellers.

In his work for me and others, he has clearly demonstrated the ability to take on a research topic and make it his own. He has the drive and ambition to take the next step and become an associate professor, running his own group in computational neuroscience. I can highly recommend Vassilis for the position on offer, and fully expect him to continue to have an excellent research career.

Yours sincerely,

A handwritten signature in black ink, appearing to read 'B. P. Graham', written in a cursive style.

Dr Bruce P. Graham
Reader in Computing Science