ELSC-ICNC Seminar: Paul Dean

December 8, 2011

On the topic of: Adaptive Filter Models of the Cerebellum: Fact or Fiction?

ELSC & ICNC cordially invite you
to the lecture given by:

Paul Dean
Emeritus Professor, Department of Psychology, University of Sheffield, UK

On the topic of:

"Adaptive Filter Models of the Cerebellum: Fact or Fiction?"

The lecture will be held on Thursday, December 8th
at 17:00, at ELSC-ICNC: Silverman Bldg., 3rd Wing, 6th Floor, Edmond J. Safra Campus

Light refreshments at 16:45

Abstract:

A surprisingly large number of models concerned with the cerebellum's role in motor control share features of the adaptive filter model first put forward by Fujita in 1982. The first part of the talk seeks to explain this popularity, proposing that such models (i) are computationally powerful; (ii) appear to explain certain unique features of cerebellar structure; and (iii) embody a decorrelation algorithm that lends itself naturally to sensory prediction and motor control. The second part addresses how the model could be tested, based on the framework of the cerebellum as a large array of 'chips' with similar internal structure but different external connections. It is argued that while some cerebellar chips do seem to function as adaptive filters, the connectivity of most has not yet been adequately explored. Moreover, there are certain features of the basic cerebellar microcircuit, for example Purkinje cell bistability, that appear completely incompatible with the adaptive-filter model. It is concluded that resolving these issues will depend in part upon modeling the cerebellum at the levels of both detailed physiology and abstract signal processing, as proposed under the REALNET project.
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