



## SMBE & IEEE EMBS Evening Lecture with Dr Dean Freestone, University of Melbourne

### Reverse Engineering the Brain: Computer Modelling of Neural Circuits

#### ABSTRACT

This presentation is focused on methods for reverse engineering the brain. In this talk, Dr. Dean Freestone will discuss various approaches for constructing computer models of neural circuits using experimental and clinical data. The computer models describe data recorded at the local field potential or electroencephalogram scale, and are therefore coarse grain approximations of neural activity. The presentation will show examples of how we can use various modelling approaches to decode the mechanisms of epileptic seizures and movement related activity from neural signals.

#### SPEAKER

Dean has a Bachelor of Engineering from La Trobe University, where he won the Tad Szental Prize for the best engineering final year student and the Hooper Memorial Prize for best final year project, under the supervision of Graeme Rathbone. He then completed a PhD in Engineering at the University of Melbourne in 2012, under the supervision of David Grayden, Tony Burkitt, Levin Kuhlmann and Mark Cook. His postgraduate work on epileptic seizure prediction won the John Melvin Memorial Scholarship for the best PhD in Engineering and the Chancellor's Prize for PhD Excellence. Dean has recently returned from Liam Paninski's group at Columbia University, New York, where he was the 2014 Victorian Fulbright Postdoctoral Fellow. He has now joined the MDHS Faculty at the University of Melbourne and is working in the Department of Medicine at the St. Vincent's Hospital where he will continue to make inroads into one of the grand challenges in science today: reverse engineering the human brain.



#### EVENING LECTURE

**Venue: The Unicorn Club, Melbourne High School, Forrest Hill, South Yarra**

*(The Unicorn Club is next to the MHSOBA Scoreboard in the South-West Corner of the Melbourne High School grounds)*

**Time: 6:00 pm refreshments for 6:30pm start**

**Date: Tuesday, 22<sup>nd</sup> March 2016**

**To register email:**

***embs.victorian@ieee.org***

All welcome

