Advanced Course in Computational Neuroscience 2008 - schedule

Week one: John Rinzel

Monday 4th August

09:30 – 11:00	Alex Thomson	Introduction to synaptic mechanisms and synaptic circuitry
11:30 – 13:00	Alain Destexhe	Biophysical models of neuronal excitability and synaptic interactions
15:00 – 16:00		Software previews & introduction of tutors
16:00 – 18:00		Discussions between students and tutors
Later		Discussions between tutors and director

Tuesday 5th August

09:30 – 11:00	John Rinzel	Dendritic integration and cable theory
11:30 – 13:00	Magnus Richardson	From Hodgkin-Huxley to integrate-and-fire models
15:00 – 16:30	Tim Vogels	MATLAB Tutorial
16:30 – 17:30	Marc-Oliver Gewaltig	NEST Tutorial
17:30 – 19:00		Computational exercises
+ after dinner		

Wednesday 6th August

09:30 – 11:00	Alex Thomson	Diversity and specificity in cortical circuits
11:30 – 13:00	Alain Destexhe	Synaptic noise: back and forth between experiments and models
15:00 – 16:00	Michiel Remme	NEURON Tutorial
16:00 – 17:00	Janet Best	XPP Tutorial
17:00 – 18:30		Computational exercises
Evening Lecture	Peter Jonas	

Thursday 7th August

09:30 – 11:00	Mark van Rossum	Synaptic Plasticity
11:30 – 13:00	John Rinzel	The nonlinear dynamics of neuronal excitability
Afternoon	Tim Vogels	Tutorial (on request) Preparation of project presentation

Friday 8th August

09:30 – 11:00	Janet Best	Tutorial on phase planes/dynamical systems
11:30 – 13:00	Erik de Schutter	Complex Purkinje cell model: parameters and calcium dynamics
Afternoon	All students	Short (2 minute) presentation of all projects
Evening		Party organized by the students

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Week two: Nicolas Brunel

Monday 11th August

09:30 – 11:00	Nicolas Brunel	Introduction to network dynamics
11:30 – 13:00	John Rinzel	Slow oscillations
14:30 – 16:00	Eilif Mueller	Python tutorial

Tuesday 12th August

09:30 – 11:00	Amos Arieli	Methods for investigating network dynamics
11:30 – 13:00	Carl van Vreeswijk	Balanced networks
14:30 – 16:00	Stefano Panzeri	Information theory tutorial I

Wednesday 13th August

09:30 – 11:00	David Hansel	Mechanisms of synchrony in large networks
11:30 – 13:00	Ad Aertsen	Propogation of synchronous activity in large networks
14:30 – 16:00	Carl van Vreeswijk	Point process tutorial
Evening	Jason Kerr	Imaging in vivo: watching the brain in action

Thursday 14th August

09:30 – 11:00	Amos Arieli	Dynamics of visual cortex in vivo
11:30 – 13:00	Carl van Vreeswijk	Models of visual cortex
14:30 – 16:00	Stefano Panzeri	Information theory tutorial II

Friday 15th August

09:30 – 11:00	David Hansel	Models of working memory
11:30 – 13:00	Ad Aertsen	Brain-machine interfaces
14:30 – 16:00	Carl van Vreeswijk	Fokker-Planck equation tutorial
Evening		Party organized by the students

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Week three: Peter Latham

<u>Monday 18th August</u>		
09:30 – 11:00	Peter Latham	Computational Neuroscience: an overview
11:30 – 13:00	Li Zhaoping	Efficient coding, to maximize information transmission, accounts for the receptive fields in early visual processes
<u>Tuesday 19th August</u>		
09:30 – 11:00	Yael Niv	Reinforcement learning I: prediction and classical conditioning
11:30 – 13:00	Nathaniel Daw	Reinforcement learning II: action selection and algorithms
<u>Wednesday 20th August</u>		
09:30 – 11:00	Nathaniel Daw /Yael Niv	Reinforcement learning III: extensions
11:30 – 13:00	Jonathan Pillow	Neural encoding models and likelihood-based methods for spike trains
Evening	Li Zhaoping	What visual feature is invisible but captures visual attention? ... a theory of V1 and its experimental tests
<u>Thursday 21st August</u>		
09:30 – 11:00	Yasser Roudi	Correlations and fitting probability distributions I
11:30 – 13:00	Jeff Beck	Population Coding
<u>Friday 22nd August</u>		
09:30 – 11:00	Jonathan Pillow	Encoding and decoding of neural population activity using generalized linear models
11:30 – 13:00	Yasser Roudi	Correlations and fitting probability distributions II
Evening		Party organized by the students

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Week four: Israel Nelken

Monday 25th August		
09:30 – 11:00	Eli Nelken	Sensory Systems
11:30 – 13:00	Yifat Prut	Motor Systems
Tuesday 26th August		
09:30 – 11:00	Yifat Prut	Motor Systems
11:30 – 13:00	Dan Lee	Robots and neuroscience
Wednesday 27th August		
09:30 – 11:00	Dan Lee	Robots and neuroscience
11:30 – 13:00	Eli Nelken	An experimentalist view of computational neuroscience
Afternoon		Project work
Thursday 28th August		
		Project work
Friday 29th August		
		Project presentations
Evening		Party organized by the students