RTXI 2015

Day 1

Time	Event	Host
0800-0900	Registration, Breakfast	
0900-0930	Introduction - What have we learned in 20 years of dynamic clamp experiments that is useful to in vivo closed-loop studies?	Robert Butera
0930-1015	**Challenges in clinical neuromodulation: transitioning from open-loop to active-sensing and closed-loop methods**	**S. Stanslaski**
1015-1035	LFP power as potential biomarker for TRD closed-loop DBS	O. Smart
1035-1050	Coffee Break	
1050-1135	**Closed-loop neuromodulation - exposing pitfall and promises of preclinical trials via RTXI**	**C. Dorval**
1135-1155	EnerCage: A smart wireless homecage for longitudinal behavioral neuroscience experiments	M. Ghovanloo
1155-1215	Cochlear implant magnetic stimulation	S. Mush
1215-1330	LUNCH	
1330-1350	Real-time feedback in neuromechanical models of locomotion	D. Edwards
1350-1410	Analysis of feedback dynamics governing motor output from a crayfish locomotor circuit	B. Chung
1410-1430	Comparative studies and dynamic clamp analyses reveal diverse neural circuit mechanisms underlying analogous behaviors.	A. Sakurai
1430-1445	Coffee Break	
1445-1530	**Rational design of non-invasive (feedback) brain stimulation**	**F. Frolich**
1530-1600	**Workshop Part 1: Architecture of RTXI** We will go over the hardware (processors, DAQs, graphics cards) and software (threading architecture, RT and non-RT threads) components of RTXI and then explain how they provide hard real-time performance. We will show the basic code structure and explain how to run real-time code within the RTXI framework. This section will also include a brief demonstration of each system module (e.g. the oscilloscope, data recorder, etc.) within the context of RTXI's software architecture diagram.	Y. Patel A. George
1600-1625	**Workshop Part 2: RTXI live demos** (and Coffee Break) We will setup stations running RTXI for everyone to try out while getting coffee. RTXI users at each station will help explain what the workspace is doing and how it's working. This will be a pre-defined set of workspaces that we walk through setting up and testing, with the purpose of familiarizing attendees with the interface. Stations will be left running for people to use during the reception.	Y. Patel A. George
1625-1700	**Workshop Part 3: Profiling and troubleshooting RT performance** This session will focus on how each workspace set up could fail and considerations for dealing with problems in each. Special attention will be given to hardware matters (graphics cards, DAQs), proper driver and kernel configurations, and benchmarking real-time performance with our built-in tests. Mention will also be given to all the new resources we have put into place, such as GitHub, our website, numerous modules, and the contact us for help / making arrangements for us to come to you and get you set up.	A. George
1700-1900	Reception	

Day 2

Time	Event	Host
0800-0900	Breakfast	
0900-0945	**Synaptic feedback strategies that minimize neuronal oscillator variability**	**A. Prinz**
0945-1005	Use of dynamic clamp to supply human induced pluripotent stem cell derived cardiomyocytes with an IK1 boost	R. Wilders
1005-1025	β1-Adrenergic regulation of ionic dynamics in mouse ventricular myocytes: A mathematical model	V. Bondarenko
1025-1040	Coffee Break	
1040-1100	Functional analysis of cardiac transient outward potassium currents in human ventricular myocytes; A dynamic clamp study	S. Springer
1100-1120	Simultaneous real-time measurement of trans-membrane potential and intracellular calcium concentration in isolated hearts	I. Uzelac
1120-1205	**Real-time interactions with the mouse motor thalamus in vitro and in vivo**	**D. Jaeger**
1205-1230	A roadmap for the future of RTXI (hardware and software)	Y. Patel