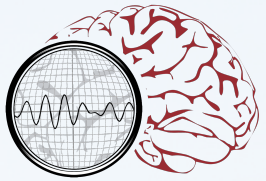

Welcome to the

IEEE Signal Processing in Medicine and Biology Symposium

Temple University
Philadelphia, Pennsylvania

December 2, 2017

Organizing Committee

- **General Chairs:**
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  - Ivan Selesnick (NYU-Poly)
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- **Local Arrangements:**
  - Shawn Fagan (Temple)
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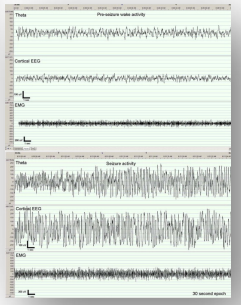
- **Conference Web Site:**
  - www.ieeespmb.org/2017

The Neural Engineering Data Consortium

Mission: To focus the research community on a progression of research questions and to generate massive data sets used to address those questions. To broaden participation by making data available to research groups who have significant expertise but lack capacity for data generation.

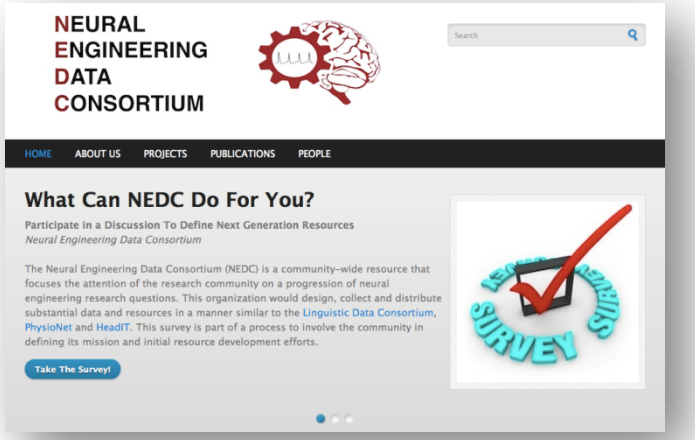


Impact:

- Big data resources enables application of state of the art machine-learning algorithms
- A common evaluation paradigm ensures consistent progress towards long-term research goals
- Publicly available data and performance baselines eliminate specious claims
- Technology can leverage advances in data collection to produce more robust solutions

Expertise:

- Experimental design and instrumentation of bioengineering-related data collection
- Signal processing and noise reduction
- Preprocessing and preparation of data for distribution and research experimentation
- Automatic labeling, alignment and sorting of data
- Metadata extraction for enhancing machine learning applications for the data
- Statistical modeling, mining and automated interpretation of big data



- To learn more, visit www.nedcdata.org

Symposium Overview

Time	Room	Session
08:00 AM – 08:30 AM	Atrium	Breakfast
08:30 AM – 09:30 AM	116	Plenary Talk No. 1
09:30 AM – 10:00 AM	Atrium	Break No. 1
10:00 AM – 12:00 PM	116	Lecture Session No. 1
10:00 AM – 12:00 PM	108	Lecture Session No. 2
10:00 AM – 12:00 PM	TBD	Lecture Session No. 3
12:00 PM – 01:00 PM	Atrium	Lunch
01:00 PM – 02:00 PM	Atrium	Poster Session No. 1
02:00 PM – 03:00 PM	116	Plenary Talk No. 1
03:00 PM – 03:30 PM	Atrium	Break No. 2
03:30 PM – 05:30 PM	116	Lecture Session No. 4
03:30 PM – 05:30 PM	108	Lecture Session No. 5
05:30 PM – 05:45 PM	116	Closing Remarks

Digital Pathology: Advancing Frontiers

Dr. Nirag Jhala

Professor, Pathology & Laboratory Medicine
Director, Anatomic Pathology/Cytology
Lewis Katz School of Medicine
Temple University

Abstract: Digital imaging today represents more of an evolution than a revolution in pathology. Emerging and evolving technology has allowed digital images to be manipulated in ways that has allowed ever-expanding applications. In anatomic pathology, these digitized images are utilized in multiple applications including making primary diagnoses, offer consultation, for telepathology, re-review and proficiency testing, archiving and sharing, education and conferencing, image analysis, research and publications, marketing and business purposes). Once a digital image has been acquired, computer applications and deep machine learning can be utilized to develop algorithms that could be utilized to improve accuracy, reliability, specificity, and productivity. Examples to demonstrate use of such activities will be highlighted in the lecture.

Biography: Before joining Temple University, Dr. Jhala served as Professor of Pathology and Director of Cytopathology at the Ruth and Raymond Perelman Center for Advanced Medicine of the Hospital of University of Pennsylvania. Dr. Jhala is internationally recognized for his seminal work in area of gastrointestinal tract pathology and endoscopic ultrasound guided fine needle aspiration. He has a long-standing interest in translating and validating biomarkers utilizing objective parameters. He has over 120 peer-reviewed publications, serves on editorial boards of several journals and continues to be invited by national and international organizations as a speaker in his area of interest.

Gait, posture, pogo-sticks and newfangled neurogenetics: How do legged animals control their locomotion?

Professor Andrew Spence

Professor, Department of Bioengineering
Temple University

Abstract: One of the grand challenges for modern science is to understand how animals (including humans!) move. Movement results from the dynamic interaction of many complex, nonlinear constituents: the nervous system, muscles, body, and an often-unpredictable external environment. This talk will present three threads of research that seek to understand different aspects of legged locomotion control: 1) comparative work in insects, dogs, and the XRL robot aimed at understanding both how and why control strategy varies with body morphology, 2) a dynamical systems approach to understanding gait, that aims to understand how the "fine structure" of experimentally observed quadrupedal gait control reflects constraints such as stability, and finally, 3) recent work that brings the new genetic tools of optogenetics and chemogenetics (DREADDs) to bear on long-standing problems in legged locomotion control, and that is finding application in spinal cord injury.

Biography: Andrew Spence is an applied physicist by training who leads a research group focused on the role of constraints (stability, energetics) in shaping quadrupedal gait control, and in applying new neurogenetic techniques to dissect the control of fast legged locomotion, and to better treat spinal cord injuries. Dr. Spence did his undergraduate work in physics at UC Berkeley, before doing a PhD in biomedical microdevices at Cornell University. He returned to Berkeley for a postdoc, and worked with Bob Full on the control of many-legged locomotion. Before coming to Temple University, he was a faculty member in the Structure and Motion Laboratory at the Royal Veterinary College, London.