BCI 2000

5ᵀᴴ BCI2000 Workshop and International Workshop on Advances in Electrocorticography

Thursday, October 1 - Saturday, October 3, 2009

The Sagamore

110 Sagamore Road
Bolton Landing, New York, 12814 USA

UNIVERSITAS CONCORDIÆ · 1839 · 1873 ·

Wadsworth Center
New York State Department of Health

Who Should Attend

This program has been carefully designed to appeal to two target audiences. The program will be of interest to the scientist with interest in theory and application of the BCI2000 software platform. The program will also have strong appeal to neurologists, neurosurgeons, and clinical neurphysiologists whose practice involves functional brain mapping for epilepsy surgery and non-epilepsy lesionectomies.

About the Symposium

Increasing understanding of brain function and increasingly sophisticated methods for interpreting brain signals are opening up exciting new opportunities for using these signals for communication or diagnosis. This three-day workshop series explores the current understanding of the theory and application of brain signals for these two purposes. It consists of a workshop on advances in electrocorticography (ECoG), i.e., recordings from the surface of the brain, and of the 5th workshop on the theory and application of the BCI2000 software. BCI2000 is a general-purpose software package for real-time data acquisition, signal processing, and stimulus presentation.

Recent developments have sparked tremendous interest in human electrocorticographic recordings to investigate the basis of normal brain function related to motor control, language, or memory, as well as of abnormal function such as epileptic seizures. This also includes a number of studies that suggest that ECoG signals are an excellent platform for Brain-Computer Interfacing (BCI) applications. BCI systems aim to provide people with severe motor disabilities with a new (i.e., brain-based) way of communicating. Other studies have demonstrated that ECoG also contains substantial information about normal and abnormal brain activity. The ECoG workshop on day two of this series (Oct. 2) reviews recent advances in this area and demonstrates examples for the beginning translation of new findings into clinical care. This includes the demonstration of a novel passive ECoG-based functional mapping technique that is receiving enthusiastic responses from initial clinical trials

The 5th BCI2000 Workshop is held on the first and third day (i.e., Oct. 1 and 3, respectively) of this series. BCI2000 is a general-purpose system for brain-computer interface (BCI) research and related areas. BCI2000 has been in development since 2000 and is currently in use by more than 350 laboratories around the world. The present workshop is the 5th event organized by the BCI2000 project, following workshops held in Albany, New York, USA (June 2005); Beijing, P.R. China (July 2007); Rome, Italy (December 2007); and Utrecht, The Netherlands (July 2008). The first part of the BCI2000 workshop (Oct. 1) consists of discussions that describe relevant technical aspects of the BCI2000 system. The second part of the BCI2000 workshop (Oct. 3) consists of hands-on practical tutorials that implement the two most common BCI approaches currently used in humans. In these tutorials, participants can use BCI systems to control a cursor on a computer screen and to spell words just by thinking. Six BCI systems will be available throughout the day, and participants will operate them under supervision of tutors.

LEARNING OBJECTIVES

At the conclusion of this conference, the participant should be able to:

- Discuss the nature of brain signals recorded electrocorticographically (ECoG).
- Contrast standard electrical brain stimulation and real-time functional ECoG mapping.
- Discuss the role of high frequency ECoG in functional assessment of brain activity.
- Recognize the emerging value of high frequency EEG recordings in the evaluation of epilepsy surgery candidates and lesionectomy candidates.
- Discuss how the BCI2000 software can be used for real-time signal analysis and feedback of brain signals associated with normal or abnormal brain function.

ACCREDITATION

Albany Medical College is accredited by the Accreditation Council for Continuing Medical Education (ACCME) to provide continuing medical education for physicians.

Albany Medical College designates this educational activity for a maximum of 17.25 AMA PRA Category 1 Credits™. Physicians should only claim credit commensurate with the extent of their participation in the activity.

TUITION

Tuition By: September 1: $300.00   After September 1: $375.00

Tuition includes admission to the symposium, access to an on-line course syllabus, breakfast, lunch and breaks each day.

TUITION REFUND POLICY

Tuition refunds, minus a $35.00 administrative charge, are possible if notification is received by September 1. After that date, one half of the paid registration fee, minus the administrative charge, can be refunded. Refunds will be processed upon receipt of a written request.

CONFIRMATION

Registrations will be confirmed by e-mail. Should you register and not receive a confirmation notice, call the Office of Continuing Medical Education to be sure we have received your information. Lodging reservation confirmation will be handled by the Sagamore.

Need Information?

For information regarding the conference, contact the Office of Continuing Medical Education by phone at (518) 262-5828, Fax at (518) 262-5679 or e-mail at riderj@mail.amc.edu

For emergency calls during the conference, call the Sagamore at 518-644-9400 or 1-800-358-3585

Web Sites

Albany Medical Center - www.amc.edu

BCI2000 - www.bci2000.org

Sagamore - www.thesagamore.com

About Lake George - www.visitlakegeorge.com

Special Needs

Should you have a disability, dietary restrictions, or require other special arrangements, please call the Office of CME by September 1 to discuss your needs.

Attire

Attire during the conference is neat casual. Since everyone has a different comfort level, we suggest that you bring a sweater or light jacket.

On-Line Syllabus

Printed syllabus material will **NOT** be available at the conference. The syllabus will be available on-line at least 5 days prior and 5 days after the conference. In order to receive access to the syllabus material, you must provide your e-mail address on the registration form. You will receive access information via e-mail. If you do not receive access information please call (518) 262 5828 or e-mail riderj@mail.amc.edu.

Acknowledgment

A complete list of supporters will be available at the conference.

LAKE GEORGE

Lake George and Bolton Landing are within the borders of the six million acre New York Adirondack State Park, created in 1892. The Sagamore is situated on a 72-acre private island surrounded by the pristine waters of Lake George.

TRAVEL

Lake George and the Sagamore are easily accessible by major highways and well-maintained thoroughfares. Air travel is available by commercial carrier to Albany International Airport. Albany airport is approximately 1 hour and 10 minutes and 75 miles south of The Sagamore Resort in Bolton Landing on Lake George.

TRANSPORTATION FROM THE ALBANY INTERNATIONAL AIRPORT

For all of your travel needs and discounted transportation to and from the Sagamore, please contact Empress Travel at 800-653-0231(USA only) or 518-374-3176 or eplog@travelempress.com

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Transportation from the Albany International Airport can also be arranged by calling the Sagamore at 1-800-358-03585 or 518-743-6015 and ask for the Travel Department or on-line at www.thesagamore.com

Taxis are also available at the Albany International Airport and cost about $150 each way.

For driving directions go to www.thesagamore.com.

THE SAGAMORE

Situated in the unspoiled Adirondack Mountains, on a 72-acre private island, The Sagamore features accommodations in the Historic Hotel and The Lodges. A year-round resort and sports paradise, The Sagamore offers a Donald Ross championship golf course, European-style Spa and Sailing School.

The Sagamore is smoke-free in the accommodations and public spaces.

ACCOMMODATION INFORMATION

A block of rooms has been reserved for the conference from Wednesday, September 30 through Saturday, October 3, 2009. The rate is $199 Lodge Room or $249 per Hotel Room per night single/double occupancy. Room rates are subject to a taxed service charge of $10.00 per person per day. This includes the service charge for housekeepers, bell staff, recreational staff, and set up staff. All charges are subject to 7% State and local taxes and a 4% Warren County Occupancy Tax, which is applicable to the room rate. (Service charges and tax are subject to change). Room rates will not be guaranteed after August 16, 2009.

Lodging reservations are to be made directly with the Sagamore by calling the Sagamore at 518-743-6207 or 1-877-724-2667. Mention Albany Medical College to secure the above rates.

Faculty

Course Directors

Research

Gerwin Schalk, Ph.D.
Research Scientist
Wadsworth Center
Albany, New York, USA

Clinical

Anthony Ritaccio, M.D., FAAN
J. Spencer Standish Professor of Neurology and Neurosurgery
Albany Medical College
Albany, New York, USA

Guest Faculty

Peter Brunner, M.S.
Wadsworth Center
Albany, NY, USA

Nathan Crone, M.D.
Associate Professor of Neurology
The Johns Hopkins Hospital
Baltimore, MD, USA

Christoph Guger, Ph.D.
Chief Executive Officer
g.tec Medical Engineering GmbH
Schiedlberg, Austria

Jeremy Hill, D. Phil
Senior Research Scientist
Max Planck Institute for
Biological Cybernetics
Tübingen, Germany

Eric C. Leuthardt, M.D.
Assistant Professor of Neurological Surgery
Washington University
School of Medicine
St. Louis, MO, USA

Robert Oostenveld, Ph.D.
Senior Researcher
Donders Institute for
Brain Cognition and Behaviour
Radboud University Nijmegen
The Netherlands

Steven Schachter, M.D.
Chief Academic Officer and Director of Neurotechnology
Center for Integration of Medicine and Innovative Technology (CIMIT)
Professor of Neurology
Harvard Medical School
Boston, MA, USA

William Stacey, M.D., Ph.D.
Instructor of Neurology
University of Pennsylvania
Philadelphia, PA, USA

Jonathan R. Wolpaw, M.D.
Chief, Neural Injury and Repair
Wadsworth Center
Albany, NY, USA

5ᵀᴴ BCI2000 Workshop
Day 1, Thursday, October 1

Morning Session

8:00a-8:45a	**Registration and Continental Breakfast**
8:45a-9:00a	**Introductory Remarks**

9:00a-10:00a **The BCI2000 Framework**
(1 CME Credit)

Gerwin Schalk, Ph.D.

This talk gives a technical overview of the BCI2000 framework.

10:00a-10:15a Break

10:15a-11:15a **Implementing a Signal Processing Filter in BCI2000 Using C++**
(1 CME Credit)

Jeremy Hill, D. PHIL

In this tutorial, the participant learns how to implement new signal processing functionality in BCI2000 using the C++ programming language.

11:15a-11:30a Break

11:30a-12:30p **BCI2000 and Python**
(1 CME Credit)

Jeremy Hill, D. PHIL

In this tutorial, the participant learns how to incorporate Python scripts into the BCI2000 pipeline to execute in real time.

12:30p-1:30p **Lunch**

12:30p-1:30p **Lunch Talk: BCI and Virtual Reality**

Christoph Guger, Ph.D.

In this talk, the participants will learn about the use of BCI technologies in virtual environments.

5ᵀᴴ BCI2000 WORKSHOP
DAY 1, THURSDAY, OCTOBER 1

AFTERNOON SESSION

1:30p-2:30p　　**BCI2000 and Matlab**
(1 CME Credit)

Robert Oostenveld, Ph.D.

In this tutorial, the user learns how to integrate Matlab functions to execute in real time within BCI2000.

2:30p-2:45p　　Break

2:45p-3:45p　　**BCI2000 and FieldTrip**
(1 CME Credit)

Robert Oostenveld, Ph.D.

In this tutorial, the user learns how to combine FieldTrip functionality with BCI2000 for implementing synchronous and asynchronous processing.

3:45p-4:00p　　Break

4:00p-5:00p　　**Overview of Available BCI2000 Components**
(1 CME Credit)

Gerwin Schalk, Ph.D.

This lecture will describe the data acquisition, signal processing, and feedback components currently implemented in BCI2000, and will discuss how they can be used to implement different types of experiments.

5:00p-5:30p　　**Q&A**
(.5 CME Credits)

All faculty

In this session, the BCI2000 faculty will answer your questions about how to use BCI2000 for your research experiments or clinical application.

International Workshop on Advances in Electrocorticography
Day 2, Friday, October 2

Morning Session: Principles of ECoG Signals and Their Interpretation

7:00a-7:45a	**Continental Breakfast**
7:45a-8:00a	**Introductory Remarks**
8:00a-8:45a	**Keynote: Overview of Emerging Technologies for Diagnosis and Treatment of Epilepsy** (.75 CME Credits) *Steven Schachter, M.D.*
8:45a-9:00a	Break
9:00a-9:45a	**History and Basics of ECoG Recordings** (.75 CME Credits) *Nathan Crone, M.D.*
9:45a-10:00a	Break
10:00a-10:45a	**Detecting Detailed Aspects of Behavior in ECoG Signals** (.75 CME Credits) *Gerwin Schalk, Ph.D.*
10:45a-11:00a	Break
11:00a-12:00p	**ECoG Brain Dynamics in High-Resolution Recordings** (1 CME Credit) *Robert Oostenveld, Ph.D.*
12:00-1pm	Lunch Break

Afternoon: Current Trends in Clinical Application of ECoG Signals

1:00p-1:45p	**Using ECoG Signals for Seizure Detection and Prediction** (.75 CME Credits) *William Stacey, M.D., Ph.D.*
1:45p-2:00p	Break
2:00p-2:45p	**Using ECoG Signals for Rehabilitation** (.75 CME Credits) *Eric Leuthardt, M.D.*
2:45p-3:00p	Break
3:00p-3:30p	**Instrumentation for Emerging Clinical Applications I** (.50 CME Credits) *Peter Brunner, M.S.*
3:30p-3:45p	**Instrumentation for Emerging Clinical Applications II** *Christoph Guger, Ph.D.*
3:45p-4:00p	Break
4:00p-4:45p	**Using BCI2000 with ECoG Signals for Real-Time Brain Mapping** (.75 CME Credits) *Anthony Ritaccio, M.D. FAAN*
4:45p-5:15p	**Q&A** (.50 CME Credits) *All faculty*

5ᵀᴴ BCI2000 Workshop
Day 3, Saturday, October 3

7:30a-8:00a   **Continental Breakfast**

8:00a-8:45a   **Keynote: Brain-Computer Interfaces for Communication and Control**
(.75 CME Credits)

Jonathan R. Wolpaw, M.D.

8:45a-9:00a   **EEG Measurement Basics**

Christoph Guger, Ph.D.

9:00a-10:45a   **Configuration, Conduction, and Analysis of mu/beta Rhythm Experiment**
(1.75 CME Credits)

Peter Brunner, M.S.

In this tutorial, the user learns how to use BCI2000 to support brain-based control of a cursor on a computer screen. Six EEG-based BCI systems are available for participants throughout this tutorial.

10:45a-11:00a   Break

11:00a-11:15a   **EEG Measurement Basics**

Christoph Guger, Ph.D.

11:00a-12:30p   **Configuration, Conduction, and Analysis of P300 Experiments**
(1.75 CME Credits)

Peter Brunner, M.S.

In this tutorial, the user learns how to use BCI2000 to support spelling using P300 evoked potentials. Six EEG-based BCI systems are available for participants throughout this tutorial.

Conference Registration Form

5th BCI2000 Workshop, and International Workshop on Advances in Electrocorticography
October 1-3, 2009

Tuition: Registration by September 1: $300.00   After September 1: $375.00
Only paid registrations can be accepted.

Name & Degree *(as to appear on conference materials)*: _____
_____ _____

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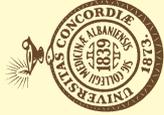
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