

Intl. Workshop on Brain-Computer Interface Technology & 2nd BCI2000 Workshop

Synopsis

Brain-computer interfaces (BCIs) use brain signals to communicate a user's intent. These systems do not depend on peripheral nerves and muscles. Thus, they can be used by people with severe motor disabilities to express their wishes to the outside world just by thinking.

Brain-Computer Interfaces integrate several aspects from Human-Computer Interaction (HCI) and Augmented Cognition (AugCog). For example, like with other conventional communication channels studied by HCI efforts, BCI communication needs to be optimized to best match the user's individual communication and control capacities. Also, just like with efforts in Augmented Cognition, brain-based communication depends on accurate measurement and interpretation of brain function.

Dates

Monday, July 23 and Tuesday, July 24, 2007

Venue

Beijing International Convention Center (BICC)

Registration

Please register with the Conference Management System (CMS) of the HCII 2007 conference at <https://www.hcii2007.org>. This will allow participation on both days of the BCI Workshops, as well as participation in the full Human Computer Interaction Conference and its satellites.

Organization

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Sponsors

National Institutes of Health, USA
(EB006356 (GS))

The BCI2000 Project
(<http://www.bci2000.org>)

g.tec Guger Technologies
(Graz, Austria)



Monday, July 23

Intl. Workshop on Brain-Computer Interface Technology

Synopsis

The first day will provide a comprehensive overview of Brain-Computer Interface (BCI) technology. The format is a series of talks that will be delivered by BCI experts from the USA, Europe, and China.

Tentative Program

Gerwin Schalk and Shangkai Gao

Opening Remarks

Gerwin Schalk, Ph.D.

Wadsworth Center, New York State Department of Health, Albany, New York, USA

Brain-computer interfacing using electrocorticography (ECoG)

Bo Hong, Ph.D.

Department of Biomedical Engineering, Tsinghua University, Beijing, PR China

BCIs using EEG oscillations: towards practical applications

Leigh Hochberg, M.D., Ph.D.

Rehabilitation Research and Development Service, Department of Veterans Affairs, Providence, Rhode Island, USA

Massachusetts General Hospital, Harvard Medical School, Boston, Massachusetts, USA

Intracortically-based human brain-computer interfaces

Len Trejo, Ph.D.

Quantum Applied Science and Research, Palo Alto, California, USA

Development of a hybrid EEG sensor array for brain-computer interfaces

Febo Cincotti, Ph.D.

Fondazione Santa Lucia, University of Rome, Rome, Italy

Neuroelectrical imaging and different feedback modalities for BCI control

Klaus-Robert Mueller, Ph.D.

Department of Computer Science, Technical University of Berlin, and Intelligent Data Analysis Group, Fraunhofer Institute FIRST, Berlin, Germany

BBCI: A machine learning approach to Brain Computer Interfacing

Eric Sellers, Ph.D.

Wadsworth Center, New York State Department of Health, Albany, New York, USA

Brain-computer interface via the P300 event-related potential

Christoph Guger, Ph.D.

g.tec Medical Engineering, Graz, Austria

Brain-Computer Interfacing in virtual environments

Tuesday, July 24
2nd BCI2000 Workshop



Synopsis

The second day will provide hands-on practical tutorials using different BCI approaches implemented using BCI2000 software and hardware from g.tec. BCI2000 is a general-purpose software system for Brain-Computer Interface research that is currently in use by more than 110 laboratories around the world. Devices from g.tec are ideally suited for BCI experiments. Their operation is fully supported by BCI2000. In these tutorials, we provide several EEG-based BCI systems for use by workshop participants.

BCI2000: A General-Purpose Brain-Computer Interface System

(Gerwin Schalk, Ph.D.)

This talk will provide an overview of the BCI2000 system and give examples of its use for brain-computer interfacing, data acquisition, stimulus presentation, and brain monitoring applications.

Configuration, Conduction, and Analysis of Sensorimotor Rhythm Experiments

(Febo Cincotti, Ph.D. and Eric Sellers, Ph.D.)

In this tutorial, the user learns how to analyze and configure BCI2000 to support brain-based control of a cursor on a computer screen.

Advanced Signal Processing

(Christoph Guger, Ph.D.)

In this tutorial, the user learns advanced signal processing concepts for offline analysis of BCI experiments.

Configuration, Conduction, and Analysis of P300 Experiments

(Eric Sellers, Ph.D. and Febo Cincotti, Ph.D.)

In this tutorial, the user learns how to analyze and configure BCI2000 to support spelling using P300 evoked potentials.