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Author: Andrey Zhdanov Jussi Nurminen Eric Larson

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Helsinki VideoMEG Project: augmenting magnetoencephalography with synchronized video recordings

Andrey Zhdanov[a,*], Jussi Nurminen[a], Eric Larson[b]

[a] *BioMag laboratory, HUS Medical Imaging Center, Hospital District of Helsinki and Uusimaa, P.O. Box 340, FI-00029 Finland*
[b] *University of Washington, Institute of Learning and Brain Sciences, 1715 NE Columbia Road, Box 357988, Seattle, WA, USA 98195*

Abstract

The primary goal of the Helsinki VideoMEG Project is to enable magnetoencephalography (MEG) practitioners to record and analyse the video of the subject during an MEG experiment jointly with the MEG data. The project provides:

1. Hardware assembly instructions and software for setting up video and audio recordings of the participant synchronized to MEG data acquisition
2. Basic software tools for analysing video and audio together with the MEG data

The resulting setup allows reliable recording of video and audio from the subject in various real-world usage scenarios. The Helsinki VideoMEG Project allowed successful establishment of video-MEG facilities in four different MEG laboratories in Finland, Sweden and the United States.

Keywords:
magnetoencephalography, epilepsy, synchronous video, video

1. Introduction

Magnetoencephalography (MEG) is a non-invasive functional brain imaging method that monitors neuronal activity by measuring the associated magnetic fields [1]. In clinical practice MEG is mostly used for pre-surgical localization of epileptogenic zones, where it has been shown to detect sources of pathological activity that are undetectable by other non-invasive techniques [2, 3].

MEG is in many respects similar to the closely related technique of electroencephalography (EEG): the two techniques share the underlying sources of

*Corresponding author
Email addresses: andrey.zhdanov@aalto.fi (Andrey Zhdanov), jnu@iki.fi (Jussi Nurminen), larsoner@uw.edu (Eric Larson)