Demonstration: A smartphone 3D functional brain scanner - DTU Orbit (05/07/2019)

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We demonstrate a fully portable 3D real-time functional brain scanner consisting of a wireless 14-channel 'Neuroheadset' (Emotiv EPOC) and a Nokia N900 smartphone. The novelty of our system is the ability to perform real-time functional brain imaging on a smartphone device, including stimulus delivery, data acquisition, logging, brain state decoding, and 3D visualization of the cortical EEG sources. Custom-made software realized in Qt has been implemented on the phone, which allow for either the phone to process the EEG data locally or transmit it to a server when more advanced machine learning tools are preferred. Source localization is implemented locally on the phone with a 3D brain model consisting of 1,028 vertices and 2,048 triangles stored in the mobile application.

Our system design benefits from the possibility of being able to integrate with multiple hardware platforms (smartphones, tablet computers, and netbooks) that are based on Linux operating systems.

**General information**

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Contributors: Stahlhut, C., Stopczynski, A., Larsen, J. E., Petersen, M. K., Hansen, L. K.  
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