DTU BCI speller: An SSVEP-based spelling system with dictionary support - DTU Orbit (13/12/2018)

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In this paper, a new brain computer interface (BCI) speller, named DTU BCI speller, is introduced. It is based on the steady-state visual evoked potential (SSVEP) and features dictionary support. The system focuses on simplicity and user friendliness by using a single electrode for the signal acquisition and displays stimuli on a liquid crystal display (LCD). Nine healthy subjects participated in writing full sentences after a five minutes introduction to the system, and obtained an information transfer rate (ITR) of $21.94 \pm 15.63$ bits/min. The average amount of characters written per minute (CPM) is $4.90 \pm 3.84$ with a best case of $8.74$ CPM. All subjects reported systematically on different user friendliness measures, and the overall results indicated the potentials of the DTU BCI Speller system. For subjects with high classification accuracies, the introduced dictionary approach greatly reduced the time it took to write full sentences.

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