BSc/MSc-project for students in Biomedical Engineering, DTU/KU

Title: Eye-training of infants using eye tracking

Description: Cerebral palsy (CP) is a disorder that affects the motor system and will influence the person for the rest of his/her life. However, with an early diagnosis and early intervention, the problems related to the disorder can be reduced. It is desirable to be able to start intervention as soon as possible, i.e. at the age of 3-5 months. One problem is that many people with CP have vision problems which might hinder optimal intervention for the infant.

In this project, the student(s) should develop a system for early training of the infant's vision. One possibility is to use commercial and infrared eye tracking systems for easy access of visual input. However, with the continuous improvement of both CPU's and cameras in handheld devices such as smartphones and tablets, it might be enough to consider eye tracking using ordinary cameras, which is not a new approach for doing low-cost eye tracking.

The project should thus both consider testing different solutions for measuring the gaze of the infants, as well as development of small games for training the vision. Furthermore, the project should consider ways of limiting the amount of calibration, as this is not always possible when working with infants.

Required qualifications: Knowledge of; Matlab or similar, eye tracking, image analysis, game/app development, user experience,

Responsible institution: University of Copenhagen

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Allowed no of students per report (1-2): 1-2

KU supervisor: Jens Bo Nielsen, Professor, dr.med., Ph.d.

DTU supervisor: Per Bækgaard, Associate Professor, PhD, MSc EE