Creating a database for studies of HCI markers

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HCI (Human Computer Interaction) markers can be used for detecting and monitoring medical conditions of users. The concept is based on an analogy to biomarkers, which are used to indicate physiological changes. During the interaction between users and information systems, a constant stream of data is created – through keyboards, pointing devices (e.g. computer mouse, touch screen) and different sensors (e.g. cameras, microphones, GPS receivers, etc.). These data contain signals, which might provide information about the user's cognitive, mental, psychological or physiological state.

Though they do not refer to them as HCI markers, in recent years a number of studies in several academic disciplines take an approach that is identical to that described by the concept of HCI markers. Despite the various terms they use, all of these studies describe novel HCI markers that can be used to detect or monitor different conditions or states of the user.

The purpose of this project is to identify those studies and the common features they share, in order to develop a literature-based conceptual model of HCI markers.

After identifying a sufficient number of studies of HCI markers, I have found the components that consistently characterize each study. I created a database (using Excel software) that contains the studies and their specific components, organized by categories. A few of the categories that comprise the database are the conditions (e.g. Alzheimer's disease, depression, stress, etc.); the HCI markers (e.g. typing speed, length of utterance, number of unique words, etc.); and the artifact (e.g. computer, smartphone, etc.);

The completed database, which contains 79 studies of HCI markers, does not only detail the various components, but can also study the relationships between them.

Analyzing and understanding the relationships will allow to create a complete literature-based conceptual model of HCI markers.