

Robert Gordon University

Michael Crabb

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University Partner:

Robert Gordon University

Academic Supervisor - Name and Email Address:

Dr Michael Crabb - m.j.crabb@rgu.ac.uk

Suggested Project Title:

Information and User Based Adaptations for Data Intensive Interfaces

Suggested Project Summary:

Within data intensive environments it is very common for mistakes to be made or instructions to be missed due to the sheer amount of information that is being presented to a user. Information overload is becoming a concern within such environments as we become more reliant on data-heavy streams of information. This can lead to problems where users are expected to analyse and interpret data at a very high speed. These issues can range in severity but at a very basic level can hurt the effectiveness and productivity on a company-wide level.

Computer Interfaces can be optimised for specific users based on an understanding of their cognitive abilities. Individual differences in a users' abilities (such as fluid intelligence and processing speed) can be used to explain user comfort when using specific interfaces. Previous work has suggested that user characteristics can account for around 40% of user 'ease of use'. A combination of user and data based adaptations may, therefore, lead to higher levels of user comfort and may make data interfaces easier to interpret on a user by user level.

The intended approach for this work draws inspiration from the accessible computing field where it is common knowledge that a one-size-fits-all approach does not work within a design. We anticipate that the same is true within data-intensive environments and wish to explore how interfaces can be tailored based on an individual's abilities and on the data that is currently being examined. We envisage that this work could be especially beneficial within an industrial setting where aspects such as fatigue and lapse in concentration when using complex interfaces could lead to financial, productivity, and safety issues.

Collaboration Sought for the Project:

We anticipate that the outcomes of this PhD work will examine how interfaces can be adapted to take advantage of individual user ability and the data that is currently being examined by a user. We are therefore seeking collaboration with a company that currently deals with large amounts of data that is displayed on complex interfaces. This could be related to data that is gathered by the company itself or aggregated from

several external sources. This work would be most beneficial to a company that analyses large amounts of data in real time that is then presented to a user. We anticipate that this work will involve a degree of ethnographic field work to determine how interfaces are currently used. It would be beneficial for a PhD student to spend time working within the company so that they can understand current processes that are used.

Benefit to the Industry Sponsor:

n/a

Published or Private?:

Yes