Media Engineering and Technology Faculty
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Interruption Awareness Application

Bachelor Thesis

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This is to certify that:

(i) the thesis comprises only my original work toward the Bachelor Degree

(ii) due acknowlegement has been made in the text to all other material used

Ali Soliman
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Acknowledgments

Text

Abstract

Abstact

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Chapter 1

Introduction

Notification Systems are tools specifically designed to provide the users with informative content instantaneously sent from secondary applications. Due to the tremendous amount of applications now in the market and the randomness of the notifications that are being sent. Users are getting more likely affected negatively in their primary tasks in a lot of manners like negative effects on their task completion time, error rate, annoyance and anxiety.

As notifications have different cost of interruption. We need to quantify this cost as well as show awareness messages to the user in suitable manner. Taking the challenge of integrating the massive bio-sensors field in the identification of the cost of notifications interruption.

- Recording Eye Gaze movement while working on a specific task
- Thus propose different solutions and information whether visually of using alarming systems to let the users understand their state and how it's changed with the interruptions along the time. Users will then have a better understanding of their performance curves and how it is negatively being affected by these interruptions and distractions.
- To understand if the process has a positive effect on the users or not. We will test on two different types of users with the same workload, One of them is working using our interruption awareness system and the other is not using it.

If enhancements of time management and productivity appears on our first group, this will prove that our approach is correct and that notification management is a challenge for productivity and time management.

Chapter 2

Background

2.1 Notification

While we think that turning off notifications or switching off our smartphones can lead for a better results, Experiments showed that in some of the cases it actually shows positive results while in other cases it showed more interruptions as some of the users were always refreshing waiting for the next. [3]

Experiments also showed that notifications who calls for action and diverts to another application are most probably having a negative effect and a huge cost of interruption. A solution was proposed to that is to eliminate the call for action buttons and to make the notification only focus on the new information part and let the users decide whether they would like to navigate to another application or not. However, This didn't show an insightful indicator whether users were affected with this or not.

2.2 Task Modelling

Empirical studies were conducted and the authors decided to take psychological theories approach. To backup this approach a Task division model was implemented to tackle the problem.

Task Division Model focused on categorizing our day to day tasks. Based on the users answer the author proposed two categories for the new Model.

- Hard Subtasks - This includes but not limited to tasks that needs a lot of focus like brainstorming an idea or thinking about the architecture of a new built city.
- Easy Subtasks - This includes but not limited to tasks that the user knows how to execute exactly. Let's say that a new method is being implemented and I have done the very same task a couple of times previously and I know exactly how I'm going to do it this time. This can be modeled as an easy subtask.

Primary tasks were divided into subtasks. Moreover, These subtasks were modeled based on categorizing these subtasks into the two above categories. Users were given large tasks and were asked to divide these tasks into subtasks and categorize them into the mentioned above two categories and what the majority agreed upon as a hard task was chosen as a spot that is the best fit for a notification interruption. This actually showed a positive impact on the users and they were able to focus more on their tasks and finish them in less time.[1]

2.3 Cost of Interruption

As notifications have different cost of interruption this cost of interruption is inversely proportional to the urgency of the notification to the user, Users have different notification priorities. This is why a solution was proposed to overcome this issue by utilizing the same notification in different ways in terms of design. Delivering this notification will depend on the its urgency to the user. The author thought about attention as a constrained resource that can be traded for some utility. This utility is enabled by perceiving additional, valued information while performing other primary tasks. [4]

2.4 Bio Sensors

Also Bio-Sensors have a huge advantage over other emotional detection methods as they can overcome many environmental conditions that challenges other emotional detection methods. Research results indicates that post bio-sensors training can achieve 89.9% - 96.6% accuracy rates of emotional state detection. [2]

Chapter 3

Conclusion

Conclusion

Chapter 4

Future Work

Text

Appendix

Appendix A

Lists

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