

Initial Project Overview

SOC10101 Honours Project (40 Credits)

Title of Project:

Investigating Fitts' Law as a Discriminant for Identifying Possible Dyslexia in Primary School Children

Overview of Project Content and Milestones

The Main Deliverable(s):

The goal of the project is to produce evidence of whether or not the Human Computer Interaction theory of Fitts' Law can be used in the identification of dyslexia in children, before they develop the literary skills required to take traditional dyslexia diagnoses tests.

The Target Audience for the Deliverable(s):

The target audiences of the pre-stated evidence are; teachers, researchers and those who work in school learning support departments.

The production of evidence would not only allow said parties to more accurately identify dyslexia but also allow for identification at a younger age. It could also allow for further research into the use of HCI for the detection of learning difficulties.

The Work to be Undertaken:

- Collection of sample data from university students – crucial as it is unknown if previous test participants were dyslexic or not
- Building of a system to analyse data for patterns – detect valid/invalid sectors in the dot-to-dot game
- Analysis and comparison of pre-existing / collected data – compare patterns from known dyslexic participants with unknown, check for similarities
- Evaluate of results

Additional Information / Knowledge Required:

Data Mining and Data Analytics

Appropriate Statistical techniques

Information Sources that Provide a Context for the Project:

Prof Jon Kerridge – “Dot-to-Dot” data and system

Rasmus Monk – “An Investigation into the Dot-to-Dot Dataset”

Scott MacKenzie – “Movement Time Prediction in Human-Computer Interfaces”

The Importance of the Project:

While dyslexia detection via the use of technology is not a new concept, the benefit of focusing on Fitts’ Law has not been documented before. Evidence produced from this project could allow dyslexia to be detected from an earlier age, mitigating the effects it has on children in school and everyday life.

Evidence produced from this project could also indicate that other HCI concepts could be usable in the detection of learning difficulties, and provide hints for areas of further research.

The Key Challenge(s) to be Overcome:

As this project consists of researching a very specific, relatively unexplored area, there is very little existing literature. While there are many papers and journals explain and describing the benefits of Fitts’ Law, none relate to its use in diagnosing dyslexia.

Another key issue to be aware of is the amount of sample data available. The crux of the project is data analytics, but without a large enough sample size it may be impossible to draw a meaningful conclusion from the data. For this reason, additional data must be collected – this time from University students. By testing participants who already know if they are dyslexic or not, it will provide a firm base of patterns which we can compare unconfirmed participants against.