

Acquired Brain Injury Memory Exercises

Mark Wilkie

September 2012

**Dissertation submitted in partial fulfilment for the degree of
Master of Science in Information Technology**

**Computing Science and Mathematics
University of Stirling**

Abstract

Problem

Individuals whom have suffered from an acquired brain injury may face a detrimental effect on their memory function. It is theorised that an individual will be able to regain some of the lost abilities within the brain through training of neural pathways. As the brain has the ability to rewire itself 'neuro – rehabilitation/cognitive-rehabilitation' can be used to improve the brain's functions after such injuries and allow an individual to return to employment (Japp, J, 2003).

This area of research is underfunded and as such very little in new technology exists to improve an individual's brain functions. It is proposed that through the use of computerised, repetitive exercises, an individual's memory function may be improved over time.

This project was commissioned by James Japp of Neuro Psychologists UK in an attempt to provide a straight forward approach to helping individuals to train their memory functions with minimal supervision, and to provide feedback on a user's progress in specific areas.

Objectives

The main objectives of this project are:

- To provide a user friendly interface with a simple to understand control system
- To provide activities in five main areas of memory function
- To provide a form of useful feedback (data collection) from the user's progress. The feedback may then be analysed to assess improvement.
- To include an Administrator area for setting each activities parameters with password protection.

The final application should contain a set of activities geared towards different areas of memory, namely, numerical memory, image positioning memory, short term visual recognition, sequencing memory and verbal memory. These areas will be split into five specific task areas with a combination of all exercises being available to the administrator, should they wish to assess overall performance of a user periodically.