**MAT(Manipal Aphasia Therapy) App-I**

(**Phonological Components Analysis)**

In partial fulfillment of the requirements for the award of

Degree of Master of Computer Applications

**Submitted by**

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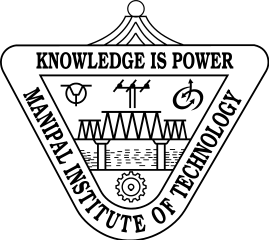
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**ABSTRACT**

Aphasia is an inability to comprehend and formulate language because of damage to specific brain regions. This damage is typically caused by a cerebral vascular accident (stroke), or head trauma, however these are not the only possible causes. The diagnosis to this disease involves simple exercises, such as asking a person to name as many words as they can think of, or asking them to name objects.

One among many available therapies to treat aphasia is Phonological Component Analysis, which helps patients to improve their naming ability by identifying pictures of general interest, but traditional method requires doctor to treat the patients alongside.

Considerable proportion does not receive therapy in India mainly due to Dearth of trained professionals and distant rehabilitation centers. Theory driven techniques and incorporation to technology is in high demand to overcome the problem.

To address the above issue MAT-APP-I was designed and developed. MAT APP-I provides an interface to diagnosis the disease through pictures and phonological cues. It is a concerted effort to automate the entire process of training, report generation (for researchers), graphical presentation of progress (for patients).

The app has been developed using Android studio 2.3.3, PHP 5.6.19 and is compatible with android based mobile phones running OS versions 4.4 (KitKat) and above.

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**1.Introduction**

In the present health care scenario, the health care industry is pressurized to manage patient services more efficiently. There has been specific restructuring the delivery of health care services which are expected to cause significant changes in the health care system as a whole and thereby, resulting in a paradigm shift of the diagnosis completely.

*Development of the Android application*

* Present all the 100 pictures one-by-one (requires the vocal response capture and storing). Further, an accuracy indicator (correct/incorrect button) needs to be used.
* From all the failed items 50 items (or all items if the total number of failed items is ≤50) will be selected for the training purpose.
* An algorithm would be implemented to distribute 5 training items per day.
* The user log will be saved and transferred to the investigator (web-based).

Aphasia app was developed to address this need. The main focus of the application was to improve diagnosis method of aphasia patients through the use of android app.

**1.1 Motivation for the proposed work**

The Dept. of Speech and Hearing, School of Allied Health Sciences, Manipal University is actively involved in finding diagnosis for Aphasia. Subsequently, a proposal for digitization of work processes in diagnosis of aphasia was tendered to the Department of Computer Applications, MIT, Manipal. The need for the application was identified since processes in diagnosis of aphasia are presently manual. This would help streamline the workflow and allow creation of a digital repository of reports.

**1.2 Objectives**

1. To develop an android based mobile application targeting patients with aphasia through stimulus training
2. To develop web application to interface with the mobile application for storage and retrieval of patient records and images.

**1.3 Technical Details**

Aphasia-app is an Android developed using Android Studio for designing the user interface. MySQL is used as the backend database

**1.3.1 Hardware Requirements**

Table 1.1: Hardware Requirements for mobile application (Developer)

|  |  |
| --- | --- |
| Processor | Intel Pentium 3 or later |
| RAM | 1024 MB or higher |
| Hard Drive | Desktop or Laptop with minimum 10 GB |

Table 1.2: Hardware Requirements for web application (End User)

|  |  |
| --- | --- |
| Processor Architecture | ARM v7 or higher |
| RAM | 512 MB or higher |
| Phone Memory | 512 MB or higher |

Table 1.3: Hardware Requirements for mobile application (Developer)

|  |  |
| --- | --- |
| Processor | Intel Pentium 3 or later |
| RAM | 1024 MB or higher |
| Hard Drive | Desktop or Laptop with minimum 10 GB |

Table 1.4: Hardware Requirements for web application (End User)

|  |  |
| --- | --- |
| Processor | Intel Pentium 3 or later |
| RAM | 1024 MB or higher |
| Hard Drive | 1024 MB or higher |

**1.3.2: Software Requirements**

Table 1.5: Software Requirements for mobile application (Developer)

|  |  |
| --- | --- |
| Operating System | Windows 7 or later |
| Android OS | Android 4.3 or above |
| Database | SQLite |
| Internet connection | YES (minimum bandwidth 60kbps) |

Table 1.6: Software Requirements for mobile application (End User)

|  |  |
| --- | --- |
| Android OS | Android 4.3 or above |
| Internet connection | YES (minimum bandwidth 60kbps) |

Table 1.7: Software Requirements for web application (Developer)

|  |  |
| --- | --- |
| Operating System | Windows 7 or later |
| Android OS | Android 4.3 or above |
| Database | SQLite |
| Front End | MySQL 5.5 |
| Back End | HTML, CSS3 |
| Internet connection | YES (minimum bandwidth 60kbps) |

Table 1.8: Software Requirements for web application (End User)

|  |  |
| --- | --- |
| Browser | Mozilla Firefox, Google Chrome |
| Internet connection | YES (minimum bandwidth 60kbps) |

**1.4 Project Details**

Team size: 03

Duration of project: 02 months (May 1st to July 1st 2017)

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