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**SCHOOL OF ENGINEERING AND COMPUTING**

Biomedical Engineering Program

**Title of Project**

By:

Name of Students

Supervisor:

**Dr. Name**

A graduation project submitted to the Faculty of Engineering in partial fulfillment of the requirements for the degree of bachelor’s in biomedical engineering.

A picture containing text, sketch, symbol, pattern

Description automatically generatedMonth Year

Acknowledgments

I would like to express my gratitude to my supervisor, Dr. [Supervisor’s Name], for the continuous support and guidance throughout this project. Special thanks to my family and friends for their encouragement, and to those who shared their insights about the needs of Alzheimer's patients, which greatly helped shape the vision for this project.

Abstract

This project introduces a memory card game specifically designed for individuals with Alzheimer’s disease. The goal is to help improve memory recall by using personalized content on the cards, such as images of family members, favorite objects, or places that hold personal significance. The game aims to stimulate cognitive function while providing a sense of familiarity and emotional comfort to the players. The design focuses on creating an engaging yet simple interface to ensure accessibility for patients at various stages of Alzheimer's. The game also includes different levels of difficulty (Easy, Medium, Hard) to accommodate varying cognitive abilities. This report discusses the design, implementation, and expected outcomes of the game.

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# Introduction

## Section

## Background

Alzheimer's disease is a progressive neurological disorder that affects memory and cognitive function. As the disease progresses, patients often lose the ability to recognize loved ones and familiar objects, leading to emotional distress and confusion. This project addresses this issue by designing a memory card game tailored for Alzheimer’s patients. The game uses familiar images, such as family members, personal belongings, or places, to help stimulate cognitive function and strengthen memory recall through association.

## Objectives

The primary objective of this project is to create an interactive memory card game that is both engaging and therapeutic for Alzheimer's patients. By incorporating personalized images on the cards, the game provides emotional resonance, aiming to enhance cognitive function and memory retention. The game also features adjustable difficulty levels to cater to different cognitive stages of Alzheimer's, ensuring accessibility and enjoyment for a broad range of patients.

## Constraints and Standards

The game must be easy to understand and navigate, considering the cognitive challenges faced by Alzheimer’s patients. Cards should feature large, clear images, and the interface must be simple, with no unnecessary distractions. Ethical considerations, such as patient dignity and emotional well-being, have been prioritized in the design process.

## Design Achieved

For this project, we used a combination of HTML, CSS, and JavaScript to design the game interface. HTML was used to structure the content of the memory card game, CSS was implemented for the visual styling of the cards and overall layout, ensuring a clean and simple user interface suitable for Alzheimer’s patients. JavaScript was used to manage the game logic, including the flipping of cards, matching pairs, and adjusting difficulty levels. The design was successfully achieved by integrating these technologies to create an interactive and accessible game.

# Background/or Literature Review

## 2.1 Section

## 2.1 Literature Review

* Review and contrast 5-7 conference or journal papers discuss similar problem (with references)

## 2.1 Section

* Highlight any requirements or constraints of published work
* Highlight your contribution to previous work
* Brief description of the used technologies, equipment, circuits, design, …etc (Background)

# 3. Design

## Requirements

The game must include:

* Personalized images for each player (family members, favorite objects, places, etc.).
* Three difficulty levels: Easy, Medium, and Hard.
* Large, clear cards and a simple interface.

## Analysis of Requirements and Constraints

The primary challenge is ensuring that the game remains engaging without overwhelming the patient. The difficulty levels need careful calibration, and the content should be thoughtfully selected based on each patient’s background.

* Both pre specified and based on requirements analysis

## Different Designs Approaches/choices

The game was designed using [specify technology], with a focus on flexibility to allow caregivers to upload personalized images. The interface was simplified to accommodate patients with varying levels of cognitive function.

## Developed Design

* Flow charts
* Schematic
* Pseudo codes
* System level diagrams
* Architecture diagrams
* System/transistor diagram
* Etc

## Did the Design Meet Requirements and Constraints

* Use table to summarize requirements and constraints met with justifications

# 

# Results

## Prototype Setup

* + Hardware
  + software

## Experiment/Simulation Setup

## Experiment/Simulation Results Discussion:

* + Use
    - Tables: The tables should be mentioned and explained during the context (e.g. Fig. 3.3). The numbering style of the figure should be as they presented in each Chapter (e.g. Table 3.3 : this mean that this is table number 3 of Chapter 3). Finally, table caption should be like the following in the below (normally above the table)

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**Table 3.3** [Title of the table]

* + - Figures: The figures should be mentioned during the context (e.g. Fig. 3.3). The numbering style of the figure should be as they presented in each Chapter (e.g. Fig. 3.3: this mean that this is Figure number 3 of Chapter 3). Finally, figure caption should be like the following in the below (normally below the figure)



**Fig. 3.3** [Figure title]

## Summary of constraints

* + Discuss and analyze whether the requirements and realistic constraints are met

# Conclusion and Future Work

The conclusion should draw out the implications of findings and any possible future work.

**References**

Follow similar format as IEEE guidelines, link below

<http://www.ieee.org/documents/ieeecitationref.pdf>

APPENDICIES

These are detailed documentation of points mentioned in the report (e.g. technical data, questionnaires, chart …. etc.) which are considered supplementary information but too long or not quite relevant enough to include in the main body of the report.

Appendices may be labeled with letters as Appendix A, Appendix B, and so on.

Example,

## Appendix A: CODE