Faculty of Electrical and Electronic Engineering Technology

DEVELOPMENT OF E-BUSINESS CARD BASED ON ANDROID APPLICATION

UNIVERSITI TEKNIKAL MALAYSIA MELAKA

MUHAMMAD NABIL BIN NORHAILI

Bachelor of Computer Engineering Technology (Computer Systems) with Honours

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DEVELOPMENT OF E-BUSINESS CARD BASED ON ANDROID APPLICATION

MUHAMMAD NABIL BIN NORHAILI

A project report submitted
in partial fulfillment of the requirements for the degree of
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Alamat Tetap: No.23 Jalan Kembojasari 8, Bandar Sungai Buaya, 48010 Rawang, Selangor Darul Ehsan

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(COP DAN TANDATANGAN PENYELIA)

DR. SUHAILA BINTI MOHD NAJIB
Pensyarah Kanan
Jabatan Teknologi Kejuruteraan Elektronik dan Komputer
Fakulti Teknologi Kejuruteraan Elektrik dan Elektronik
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Signature :

Supervisor Name : DR. SUHAILA BINTI MOHD NAJIB

Date : 11/1/2022

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DEDICATION

I dedicate all my efforts and struggles to my dear parents, without them I'm meaningless. Also, I devote the work of this Final Year Project to respectable lecturers, supervisor and friends who taught and supported me in throughout the whole process.

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ABSTRACT

The use of business card is essential in all type of industries, from small to large businesses. In today modern world of business, everything involves the virtual world, such as meeting, interview, events and etc. Therefore, an e-business card is a perfect way in sharing our contact details. Especially in this pandemic era where everyone is trauma to do a physical contact with anyone. Hence, this project called Development of e-Business Card based on Android Application is proposed in order to fulfill the modern world needs. This application provide user to create their own digital business card and share with other people. Besides, user also will be able to scan the traditional business card using text recognition. Set of objectives have been identified which are to gather and analyse the requirement needed for e-business card application, to design and to develop e-business card application based on Android platform. The proposed Android application is designed using Android Studio and it is integrated with the phpMyAdmin for data storage and retrieval. Waterfall model is used as the methodology of this project, which is a great method for a small project like this. However, this e-business mobile application still possesses several limitations and need to be refined in the future.

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ABSTRAK

Penggunaan kad nama sangat penting dalam semua jenis industri, dari perniagaan kecil hingga besar. Dalam dunia perniagaan moden hari ini, semuanya melibatkan dunia maya, seperti perjumpaan, temu ramah, acara dan lain-lain. Oleh itu, kad e-bisnes adalah cara yang sempurna untuk berkongsi maklumat hubungan. Terutama dalam era pandemik ini di mana setiap orang sedang trauma untuk melakukan persentuhan fizikal dengan sesiapa sahaja. Oleh sebab itu, projek ini yang dinamakan Pembangunan Kad e-Bisnes Berdasarkan Aplikasi Android dicadangkan untuk memenuhi keperluan dunia moden hari ini. Aplikasi ini menyediakan fungsi kepada pengguna untuk membuat kad perniagaan digital mereka sendiri dan berkongsi ia kepada orang lain. Selain itu, pengguna juga dapat mengimbas kad nama tradisional menggunakan pengecaman teks. Set objektif telah dikenal pasti untuk mengumpulkan dan menganalisis persyaratan yang diperlukan untuk aplikasi kad e-bisnes, untuk merancang dan mengembangkan kad e-bisnes berdasarkan platform android. Aplikasi Android yang dicadangkan telah di reka menggunakan Android Studio dan disatukan dengan phpMyAdmin untuk penyimpanan dan pengambilan data. Model air terjun digunakan sebagai metodologi projek ini, yang merupakan kaedah yang bagus untuk projek kecil seperti ini. Walau bagaimanapun, aplikasi mudah alih e-perniagaan ini masih mempunyai beberapa batasan dan perlu diperbaiki pada masa akan datang.

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LIST OF SYMBOLS

UTeM
اونيۏرسيتي تيکنيکل مليسيا ملاک
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LIST OF ABBREVIATIONS

g	-	Generated image
f	-	Original image
f_{smooth}	-	Smoothed image
h	-	Clearer image

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CHAPTER 1

INTRODUCTION

1.1 Introduction

This chapter is the introduction of the system to be developed for the Bachelor Degree Project (BDP). The project that is developed is called e-Business Card based on Android Application. This chapter covers the explanation and discussion of the project background, the problem statement(s), the objectives, and the scope of the study.

1.2 Background of Study

Business cards are significant to the corporate and professional world. The usefulness of a business card is showing all of the contact details in a single piece of card. Everyone build connections simply with business cards, whether they are a small business owner, a large entrepreneur, or a business professional. However, a person will not carry his name cardholder around, but they will always have their phones with them.

Current business card is still relevant in this modern world, but paper business cards can take a lot of room. Many people collect paper business cards, which need to be organised and placed in folders for easier use. As a consequence, identifying a specific card from a stack of hundreds of similar cards can be difficult at times.

The significance of this project is to ease people in handling and organising hundreds of cards. Aside from that, user can obtain precise information from hundreds of cards with a single click. Especially in this in this new age of virtual alternatives, such as apps and websites, when everything is going digital.

This project is intended to develop a mobile application for interactive digital business cards. The goal of this project is to make it easier for individuals to interact with one another particularly in this era of pandemics. This application will be developed based on android application using Android Studio and phpMyAdmin to manage the databases. The user will be able to scan other people's business card using optical character recognition (OCR). OCR will be utilized to scan the hardcopy of the business cards and save the extracted information using text recognition.

1.3 Problem Statement

Business cards does not only carry important information such as name, title, email, phone number, and email, however, it is frequently the initial impression to the company's overall image. The use of digital business card is more affordable than the traditional, printed business card. This problem is supported by (Kumar, 2019) where the average cost of a deck of business cards in the United States, including design and printing, is $194 which is lot of money to spent on pieces of card.

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Besides, the printed business card can also lead to paper waste. Most papers are made from wood, so in this global warming era it is really important save the trees. According to (Scott, 2016) over 88 percent of business cards ends up in a trash can within a week of being exchanged. This problem is supported by (Ismail, 2019) that says every year, approximately seven million trees would be saved if everyone switched from paper to electronic cards. Paper waste is a serious problem which can lead to public littering, deforestation, and increase in landfill volume.

Furthermore, traditional business cards are taking a lot of spaces and it is hard to organise especially when there are hundreds of them. Also, paper business cards are really

hard to identify when they are in a stacks or piles. Hence, digital business card is the solution to that where people can easily manage hundreds of cards and easily retrieve a specific card with a single click.

Lastly, printed business card requires physical contact to exchange with other people. In this era of pandemic, everyone must avoid physical contact as much as possible to prevent the spread of virus. Because of that, digital business cards have a significant advantage over physical business cards because of this single factor.

1.4 Project Objective

The main goal of this project is to suggest a way for developing an e-business card based on an Android application that is systematic and efficient. The following are the specific objectives:

a) To develop an e-business card application based on Android Studio.

b) To develop a database for the application using phpMyAdmin.

c) To utilize optical character recognition (OCR) to scan the business cards and save the information extracted using text recognition.

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1.5 Scope of Project

This application was created for the Android platform and is aimed at people who work in the professional or business environment. The project's scope is listed below.:

a) Create an e-business card Android application using Android Studio.

b) A page for user to log in/sign up connected to MySQL database using phpMyAdmin.

c) A homepage that has several functionalities such as scan a physical business card using Optical Character Recognition (OCR), check the scanned card information, and log out function.

d) User will be able to manually insert the information such as name, phone number, email, etc.

e) User can save the scanned information into the database.

1.6 Summary

This chapter has discussed the project's background, which describes the general details of the proposed project, followed by a brief summary of the problem statement, which gives an idea of the project's development. It also addressed the project's objective and scope with the user. All of the aspects are interconnected, such as the project background, which will provide all of the details to the problem statement. While the objectives, should be able to respond to the problem statements.

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CHAPTER 2

LITERATURE REVIEW

2.1 Introduction

Business cards are also commonly used in a variety of professional environments. People are struggling with managing a large number of business cards received from partners. With the ever-increasing number of smartphone users, a mobile application is a promising solution. Business cards are exchanged as formal greetings and as a means of networking at professional meetings and gatherings. The number of business cards would skyrocket, making it difficult to keep track of or communicate with cardholders. According to (Dangiwa & Kumar, 2018) digitization is the best way to handle and ensure connectivity. Several researchers proposed and developed systems to handle and digitalize business cards using flatbed card scanners. The lack of portability of flatbed scanners is the disadvantage of this strategy. With the availability of high-resolution cameras, low prices, and faster computation speeds in smartphones, as well as the rapid increase in cell phone use, there are no longer any issues. Smartphones are becoming more convenient for digitalizing business cards.

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2.2 Study of Application Related to Optical Character Recognition (OCR)

The act of reading text from digital images with computer software is known as optical character recognition (OCR). For OCR, there are a variety of software options. Tesseract, Cuneiform, and ABBYY are three of the most common (Brisinello, et al., 2017). The majority of OCR engines are used to read text from scanned files. OCR is also used to read text from identification documents including business cards, driver's licences,

signboards and passports. It has recently been used to read text from vehicle registration plates, as well as to read traffic signs in cars. OCR, on the other hand, may be used for a variety of other purposes such as taking a note on whiteboard, scanning a book, and scanning business card.

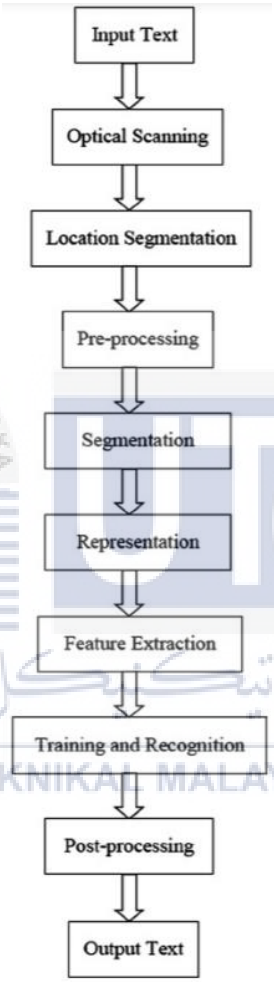

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Figure 2.1 The component of an OCR system (Chaudhuri, et al., 2016).

As shown in Figure 2.1, a typical OCR device consists of several components. The first step is to use an optical scanner to digitise an analogue paper. As text-containing regions are found, the segmentation method extracts each symbol. To make function extraction easier, the extracted symbols are pre-processed to remove noise. By comparing extracted