UNIVERSITI TEKNOLOGI MARA

DEVELOPMENT OF A PROTOTYPE FINGERPRINT SAFETY PADLOCK USING ARDUINO FOR MOTORCYCLE

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ABSTRACT

As a mode of transportation, people nowadays prefer to use motorcycles rather than any other vehicles as it is easier to manoeuvre through crowded area and better fuel consumption. Since motorcycles bring more advantages especially in traffic problem, the number of motorcycles increases each year. However, there are also some disadvantages due to huge number of motorcycles. One of the disadvantages is the rise of stolen motorcycles cases. To prevent the cases from increasing, padlocks are already invented and used to solve this common problem. The project for Final Year Project (FYP) is the adjustment and improvement of the product which is the existing padlock which is fingerprint safety padlock using Arduino for motorcycles. The objective of this project is to design Arduino based fingerprint safety padlock for motorcycles using state-of-art SolidWorks 2017 and to fabricate the designed fingerprint safety padlock as a proof of concept. The methodology starts from the concept generation, followed by design, and fabrication process of the product. The results of this projects are the product made has its own specifications, advantages, and disadvantages. The conclusion is the objectives are achieved since the product is successfully designed and fabricated.

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TABLE OF CONTENTS

CHAPTER ONE
INTRODUCTION

1.1 Background of Study

In Asian countries, motorization that dominates the mode of transportation is motorcycle and the statistics is growing fast every year especially in Malaysia with the total number of the vehicle recorded at 8,940,230 in 2009 [1]. A motorcycle or also known as bike, motorbike or 2-wheeled vehicle is of high demands in Malaysia with a statistic showing the high number of motorcycles even in the last 10 years. For the road user, they prefer motorcycle as a transportation due to its ability to easily manoeuvre through the high traffic area, good fuel consumption and also much easier to control rather than other vehicles [2].

In Malaysia, as the number of motorcycle increase, the number of motorcycles stolen are also increasing with 86 motorcycles get stolen every day on average in 2017 [3]. Stolen motorcycles case is counted as a crime and become global transportation issue. When the motorcycles are getting stolen by the thief, there is very low probability to get it back. It is quite impossible for the thief to return the motorcycles to their owner. The motorcycles can be returned to its rightful owner by the assistance of the organization involved such as the police force. Based on the cases, the safety system should be applied to the motorcycles.

The safety system on motorcycles that is globally known, and widely used is conventional keys padlock for locking and unlocking purposes. Even though the conventional key padlock is widely used, there are several weaknesses of the system such as the thief can use some tools and forces to destroy it to get someone's property or life [4]. The used of conventional keys are no longer suitable especially due to the development of technology. The use of biometric security are now growing since it is the technology that requires physical traits to identify a person [5]. Biometric is a human characteristic that can be identify or recognized to grant the access to a system and are different from one another such as fingerprints, facial patterns, voice or typing cadence. By using biometric security, to be lost or forgotten is most likely impossible [5].