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Fingerprint Based Motorbike Starter Using Arduino

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Abstract:

In this paper, we have described our detail study that we have done in our project. We will be usingfingerprintArduinosensortodesignabikestarterwhichwillignitemotorbikesenginebyscanningthefingerprint of user and then comparing it with the pre-installed fingerprints present in the database. Biometrictraits are unique to each person and are very difficult for anyone to fake them. A person's traits are alwayscarried by him, where he is physically present. Fingerprint authentication is an efficient system, unlike key-locksystem, wherethekey can belostorclonedor theycanusea masterkey.

Keywords **—Fingerprint,Safety, Vehicle.**

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I. INTRODUCTION

TBiometrics is the use of measurements, biological features such as fingerprints or iris patterns to identify aperson in an electronic system. Once these measures are taken, they can be used to authorize the individual oruser. This is done by a pre-registered biometric trait compared to a pre-recorded template. By an increasingnumber in data of fingerprint samples, it soon became fascinating to have an efficient manner of distinguishingimagesoffingerprintandusingitforsecuritypurpose.

This system allows scanning and storing fingerprints of each individual. The fingerprint sensor is one of thefinest programmed modules, as it can distinguish every individual at a very low rate of mistake. Digital locks areimplementedinwagonspreviously.Thetypeoffingerprintscanningmodulewewillpracticeistheir307fingerprint module. Basically, we will change the traditional method that is used to start a motorbike. Here, theconnection forwarded to the ignition switch will supply voltage to the voltage regulator and then to the moduleto decide that whether the motorbike should be started or not. With a time span of 10 seconds, the scanner willscan the finger placed on the R307 fingerprint module and then, if the scanned fingerprint image is allowed bycomparingittothepre-installeddatabaseoffingerprintimagesthemodulewill sendapositivesignalaccordingly and it will activate the relay which connected to the starter of vehicle and thus, the vehicle will start.If the fingerprint isnot detected bythe sensor or ifthe collected sample at the initial stage of fingerprintscanning for authorization is not similar to anyof datapresent in the database, the module will not send anykindofsingleand nofurthermoment willhappenthat isrequired tostarttheengineofthemotorcycle.

II. LIERATURE SURVEY

Fingerprints are being studied carefully for many years. The study of traits of fingerprints was seen

early in the1600s. Later, using biometrics as a means for identification for an individual first occurred in the mid-1800s. InEgypt, thousands of years ago, it was common for people to use physical features or features such as scars, eyeand hair color and height to identify people for business. Biometrics is a rapidly strengthening technology whichis widely used in technologies such as crime detection and prison security, and has the potential to be widelyaccepted at a very wide range. It has become commonplace to see fingerprints installed on various devices, andtheir installation in cars is not surprising. In cars they install these scanners as a safety feature where the carowner does not need the car keys to open the doors or start the engine. This is made for the vehicle securitypurpose as the thief could not start the car without taking the time to hot-wire the car which requires time. Inlargegovernmentagenciesandcompanies,biometric splaysamajorroleinemployeeidentificationandsafety n easy way to comply with the conference paper formatting requirements is to use this document as a template and simply type your text into it.

III. SCOPE OF PROJECT

A. Project Scope

This project will require the fingerprint scanner and once the user get register it will help the user to start his/ her bike based on the fingerprint provided by him. If the match is found in database than the bike will get started, if match is not found than the supply to the ignition of vehicle will break and bike will not start.

B. Objectives of study

1. Develop a secure system for bike safety
2. Build a algorithm for the security model

C. Constraints

1. Verified User can only start the vehicle
2. Fingerprint must be registered before using our system
3. Proper fingerprint template generate accurate result
4. Noise factors may affects in actual output
   - Fingerprintsensormustbecleananddry.
   - Applicableforallmotorcyclists.
5. Requiresprogrammingandelectricalwiring.

IV. METHODOLOGY FOLLOWED

In this system, we used a fingerprint sensor module to authenticate a true person by taking their finger input in the system. Here we are using 4 push buttons to register new fingerprint or delete stored fingerprint or match stored fingerprint. The 4 push buttons are used as an input unit for these tasks. In our project, the very first step is to capture the fingerprint by using fingerprint scanner. After capturing the fingerprint image we will extract the fingerprint template using and generate unique id per user.

When enrolling, user needs to enter the finger two times. The system will process the two time finger images, generate a template of the finger based on processing results and store the template. When matching, user enters the finger through optical sensor and system will generate a template of the finger and compare it with templates of the finger library. For 1:1 matching, system will compare the live finger with specific template designated in the module; for 1: n matching, or searching, system will search the whole finger library for the matching finger. in both circumstances, system will return the matching result, success or failure.

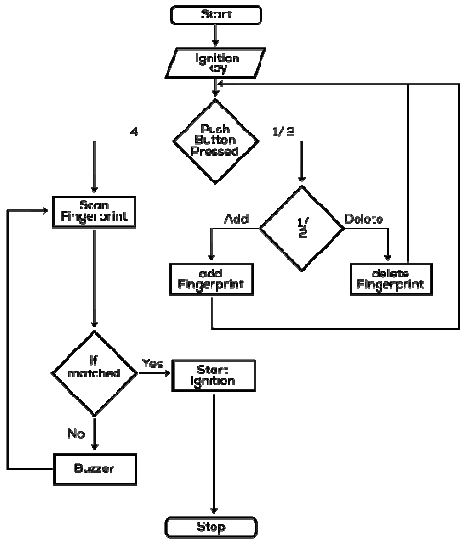

Fig. 1Flow Chart

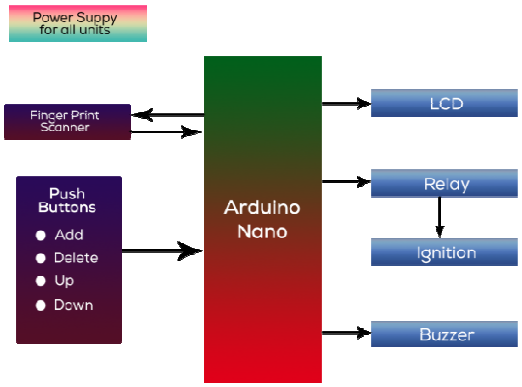

Fig. 1 Block Diagram

V. TEST CASES

1. **Test Case Id:** TC1
   Test Case Objective: Detect Fingerprint Module.
   Pre Requisites: Turn ON Power Supply
   Steps: Insert key and turn on connection
   Test Data: Fingerprint Module Status
   Expected Result: Fingerprint Module Found
   Actual Result: Module Found
   Status: Pass
2. **Test Case Id:** TC 2
   Test Case Objective:*Enroll fingerprint*
   Pre Requisites:*Place finger on fingerprint sensor*
   Steps:*Click on 1/add button*
   Test Data:*Enroll status*
   Expected Result:*Successfully enrolled*
   Actual Result:*Enrolled*
   Status: Pass
3. **Test Case Id:** TC 3
   Test Case Objective: Detect Fingerprint Module.
   Pre Requisites: Turn ON Power Supply
   Steps: Insert key and turn on connection
   Test Data: Fingerprint Module Status
   Expected Result: Fingerprint Module Found
   Actual Result: Module Found
   Status: Pass
4. **Test Case Id:** TC 4
   Test Case Objective: Detect Fingerprint Module.
   Pre Requisites: Turn ON Power Supply
   Steps: Insert key and turn on connection
   Test Data: Fingerprint Module Status
   Expected Result: Fingerprint Module Found
   Actual Result: Module Found
   Status: Pass
5. **Test Case Id:** TC 5
   Test Case Objective: Detect Fingerprint Module.
   Pre Requisites: Turn ON Power Supply
   Steps: Insert key and turn on connection
   Test Data: Fingerprint Module Status
   Expected Result: Fingerprint Module Found
   Actual Result: Module Found
   Status: Pass
6. **Test Case Id:** TC 6
   Test Case Objective: Detect Fingerprint Module.
   Pre Requisites: Turn ON Power Supply

Steps: Insert key and turn on connection
Test Data: Fingerprint Module Status
Expected Result: Fingerprint Module Found
Actual Result: Module Found
Status: Pass

7. **Test Case Id:** TC 7
Test Case Objective: Detect Fingerprint Module.
Pre Requisites: Turn ON Power Supply
Steps: Insert key and turn on connection
Test Data: Fingerprint Module Status
Expected Result: Fingerprint Module Found
Actual Result: Module Found
Status: Pass

No more than 3 levels of headings should be used.All headings must be in 10pt font.Every word in a heading must be capitalized except for short minor words as listed in Section III-B.

*1) **Level-1 Heading:***A level-1 heading must be in Small Caps, centered and numbered using uppercase Roman numerals. For example, see heading "III. Page Style" of this document. The two level-1 headings which must not be numbered are "Acknowledgment" and "References".

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Figures and tables must be centered in the column. Large figures and tables may span across both columns. Any table or figure that takes up more than 1 column width must be positioned either at the top or at the bottom of the page.

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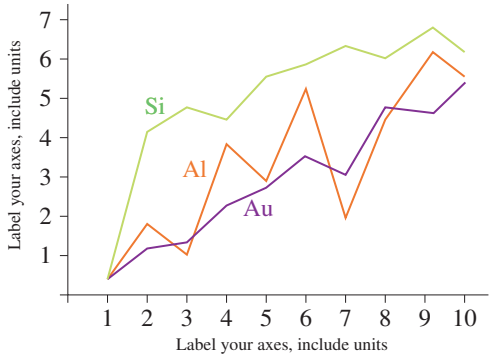

Fig. 1 A sample line graph using colors which contrast well both on screen and on a black-and-white hardcopy

Fig. 2 shows an example of a low-resolution image which would not be acceptable, whereas Fig. 3 shows an example of an image with adequate resolution. Check that the resolution is adequate to reveal the important detail in the figure.

Please check all figures in your paper both on screen and on a black-and-white hardcopy. When you check your paper on a black-and-white hardcopy, please ensure that:

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- the image used in each figure is clear,
- All text labels in each figure are legible.

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Figures must be numbered using Arabic numerals. Figure captions must be in 8 pt Regular font. Captions of a single line (e.g. Fig. 2) must be centered whereas multi-line captions must be justified (e.g. Fig. 1). Captions with figure numbers must be placed after their associated figures, as shown inFig. 1.

Fig. 2Example of an unacceptable low-resolution image

Fig. 3Example of an image with acceptable resolution

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Tables must be numbered using uppercase Roman numerals. Table captions must be centred and in 8 pt Regular font with Small Caps. Every word in a table caption must be capitalized except for short minor words as listed in Section III-B. Captions with table numbers must be placed before their associated tables, as shown in Table 1.

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When referring to a reference item, please simply use the reference number, as in [2]. Do not use "Ref. [3]" or "Reference [3]" except at the beginning of a sentence, e.g. "Reference [3] shows …". Multiple references are each numbered with separate brackets (e.g. [2], [3], [4]–[6]).

Examples of reference items of different categories shown in the References section include:

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- example of a book in a series in [2]
- example of a journal article in [3]
- example of a conference paper in [4]
- example of a patent in [5]
- example of a website in [6]
- example of a web page in [7]
- example of a databook as a manual in [8]
- example of a datasheet in [9]
- example of a master's thesis in [10]
- example of a technical report in [11]
- example of a standard in [12]

VI. CONCLUSIONS

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ACKNOWLEDGMENT

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Causal Productions wishes to acknowledge Michael Shell and other contributors for developing and maintaining the IEEE LaTeX style files which have been used in the preparation of this template. To see the list of contributors, please refer to the top of file IEEETran.clsin the IEEE LaTeX distribution.

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