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# Intelligent Crypto Mining Vehicle with Charging and Smart Toll Pay System Using Machine Learning

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**ABSTRACT—**

The automobile industry has proposed new techniques such as electric vehicle which will substitute the use of existing valuable non-renewable resources such as petrol and diesel. Similarly, the automobile industry has proposed a new approach to curtail the charges of electronic toll collection. Charges, vehicle parking expenses and expenses such as electric vehicle charging station bills. In this proposed technique, all the latter generation of vehicles should adopt a new technology called Crypto currency mining farm (CCMF), which will function as standalone mining at the vehicle end and attain cryptocurrencies. These cryptocurrencies will be utilized for meeting all types of expenses for the vehicle, which means that the vehicle will earn cryptocurrencies and spend all the listed expenses without disturbing the vehicle owner and make the travel as feasible.

***Keywords— Electric Vehicle, CCMF.***

## I. Introduction

The aim of this study was to bridge the gap between the above two types of applications. It provides a tool we have developed, which is depends upon a standalone, complex software application for determining computer systems. With the help of this tool, a user has the ability to determine both common system functions (such as processor usage, temperature, battery level, physical memory, network card, process information) and specific information gathered from processor-level hardware performance counters (number of cache requests, cache failures, predictions of jump conditions, erroneous predictions, etc.). The application is specifically developed to be used in a research approach aimed at detecting malware mining virtual currency. As an additional advantage, using the data fetched with the help of this tool, we were able to take the technique to proceed step further and promote the research and enhancement of a neural network model to predict the availability of an unwanted virtual coin mining process runs in the system.

## II. Literature review

Intelligent Cryptographic Mining and Smart Toll pay system methods with help of AI techniques such as machine learning. The related works are as follows:

[1] This proposed approach was based on a hierarchical classification method with different decision stages. A combined form of functional and statistical features is proposed to be implemented for data classification to support a high-performance malware recognition process.

[2] In this paper, the existing problems and complexities of smart grids in the view of blockchain-based cryptocurrencies are availed and an innovative approaches for the efficient integration and management.

[3] This paper proposed Multi-step Assessment for Crypto-miners (MANIC), a system to detect Crypto Jacking websites. It uses regular expressions which are compiled in correspondingly with the API structure of different miner families.

[4] It was utilized to curtail the correlation between the message and signature. In the proposed signature scheme with a blockchain, construct the PQB and proposed this crypto currency scheme. Its security can be curtailed to the lattice short integer solution (SIS) problems.

## III. Proposed work

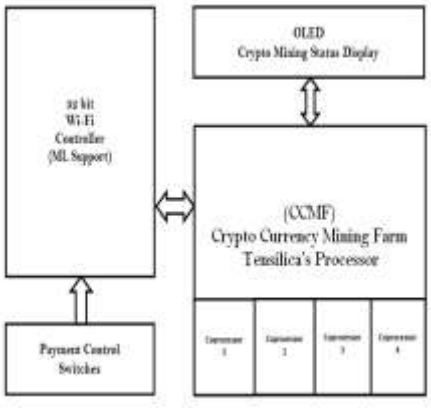



Fig. 1. Systematic Block Diagram of the Proposed Work

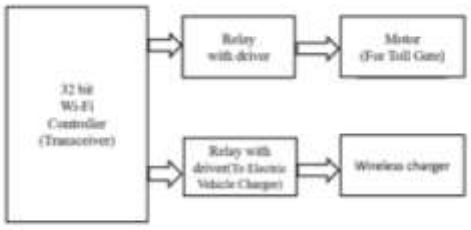



Fig. 2. Systematic Block diagram of ETC the site

The proposed concept contains two modules such as CCMF in the vehicle and Toll collection and electric charging. Tensilica's 32-bit processor is used for CMF and a Wi-Fi module is connected to the internet. A Wi-Fi module attached with two relays is connected to the ETC side for the toll gate accreditation and EV charging. The pay mode is autonomously pressed the amount from the digital wallet and the vehicle will be transferred to the ETC as a toll fee. Then it will be detected from our digital wallet.

### *A. Methodology*

This project is carried out by two machine learning classifiers as follows:

#### *1) 32 BIT WIFI CONTROLLER*:

32-bit and 64-bit reveals to the sort of certain functions that utilizes that particular architecture.


Fig 3. Wi-Fi Controller

From entry-level to high-performance options, our 32-bit MCUs have the capabilities to provide a way to create an advanced resolvers. Suppose if you want to use the Linux operating system, our 32-bit microprocessor is a natural additional extension to our MCU portfolio. Compared to an 8-bit microcontroller with the 32-bit microcontroller takes least instruction cycles to yield result of a function due to its wider data bus. A 32-bit CPU architecture is the ability of transferring 32 bits of data per clock cycle.

#### *2) OLED:*

*It* is a superficial single-chip CMOS OLED driver controller – SSD1306. It can easily communicate with the microcontroller in multiple ways including I2C and SPI. SPI is providing better than I2C but it contains more I/O pins. The I2C has only two pins and it can be shared with other I2C peripherals.


Fig. 4. OLED Display

*3) Power Supply Requirement*

The operating voltage of the SSD1306 controller it has the ranges from 1.65 V to 3.3 V. While the OLED panel requires 7 V to 15 V of supply voltage. All these different type of power requirements are satisfied for using internal charge pump circuitry. This makes it possible to easily connect it to an Arduino or any 5 V logic microcontroller easily without using any logic level converter.

*4) OLED Memory Map*

Each page consist of 128 columns/segments (blocks 0 to 127). Each column can store the 8 bits of data (from 0 to 7).

8 pages x 128 segments x 8 bits of data = 8192 bits = 1024 bytes = 1 KB of memory

*5) ARM Core Extensions:*

. Coprocessors can be attached to the ARM processor. A coprocessor enlarges the processing functions of a core by creating the instruction set or by providing configuration registers. More than one coprocessor can be added to the ARM core via the coprocessor interface. The coprocessor can be accessed through a group of independent ARM instructions that can provide a load-store type interface. If the decode stage provides a coprocessor instruction, then it obtain to the relevant coprocessor. However if the coprocessor availability which does not recognize the instruction, then the ARM takes an undefined instruction exception.

*6) Tensilica Processor*:

The processor name of Tensilica is a combined nature of the word Tensile, meaning extended its working functionalities, and the word Silica obtained from silicon, the element of which integrated circuits made. Today's smart connected world with pervasive intelligence at edge nodes for smart sensory computing is used for driving the requirements such as higher bandwidths, increased computational complexity and throughput.Previous technical approaches such as general-purpose CPUs and DSPs, FPGAs and dedicated fixed RTLs are experiencing several roadblocks such as lower performance and data throughput due to the use of bus interfaces, high power consumption, lack of programming flexibility for future-proofing, longer time to market and so on. Cadence and Tensilica processor technology offers to overcome these roadblocks and bring innovation to the forefront.

- Data throughput
- Processing speed
- Customization challenges
- Time to market.

*7)* Node MCU:

The Node MCU (Node MicroController Unit) is an open-source software and hardware development environment built by aan inexpensive System-on-a-Chip (SOC) called the ESP8266.

Programming Model: The Node MCU programming model is similar to that of Node.js, but only in Lua. LFS provides Lua code and its associated a constant data to be executed directly out of flash-memory, just as the firmware itself is executed.

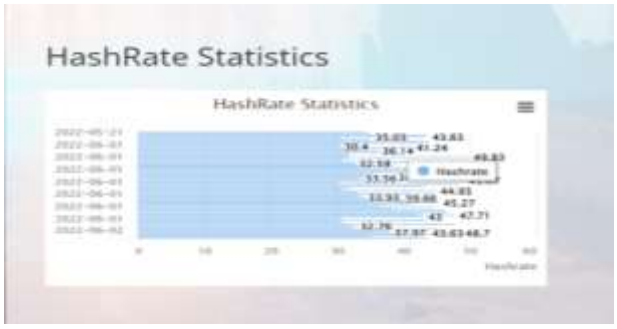
The node MCU is an open source IOT platform which includes firmwar and it runs on the ESP8266 Wi-Fi SOC from Espress. "Node MCU" by default refers to the firmware rather than the dev kits.

*8) Relays:*

A relay consits of an electromagnet and a contact unit. Activate the contact unit with the help of electromagnetic interaction, when an electric current have threshold value for flows to the electromagnet. It refers to the state in which the coil is not energized. Relays can have different independent contacts such as NO, NC and each contact can be used in a different circuit for a different task. If the coil is energized, all NO contacts depending to that relay must be accurate in order to collect capture points, teeth on the leaf margin and some minor smoothing is required to prevent the contour from becoming too noisy. Finally, the balloon energy is present to counterbalance and stabilize the other energies by exerting a steady push on the contour's outside.

## IV. RESULT AND ANALYSIS

It reveals all the results of the proposed cryptocurrency mining farm method for vehicles. The following figures are the experimental setup, in which the cryptocurrency mining farm kit can be prepared by integrating the Wi-Fi module, coprocessors, OLED and the power supply is feeded to the kit from the external source. Payment control switches are developed on the board to operate along with the CCMF (crypto currency mining farm) kit.




HashRate Statistics


Balance Statistics

Payment History

## V. Conclusion & Future work

In future, we determined to fix and identified some of the constraints as described previously and concentrate on detecting crypto-mining scripts that employ evasion techniques. The detection and working functionality analysis of obfuscated JavaScript is an open research problem from a static or dynamic perspective. We will create a strategy to adapt MANiC to extract features from the website with the help of crypto-mining scripts.

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