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NON CONTACT VOTING INK DISPENSER USING ATMEGA32 MICROCONTROLLER

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Abstract

The non-contact voting ink dispenser with fingerprint verification system presents an innovative approach to enhancing the security, hygiene, and efficiency of the voting process. Combining advanced biometric technology with wireless communication, the system enables secure voter authentication and ink marking without direct contact. This abstract highlight the system's key features and contributions to modernizing electoral systems for fair and transparent elections

I. Introduction

The Non-Contact Voting Ink Dispenser project represents a groundbreaking endeavor aimed at revolutionizing the security and integrity of electoral processes. Leveraging cutting-edge technology and innovative design, this project introduces a sophisticated voting ink dispenser system that integrates fingerprint authentication to ensure the legitimacy of each vote cast. By combining traditional voting practices with advanced biometric verification, the system offers a robust solution to combat electoral fraud and uphold the fundamental principle of one person, one vote. At the heart of the project lies the seamless integration of components such as the ATmega32 microcontroller, Bluetooth module HC 05, relay module, LEDs, and buzzer. These components work in tandem to enable swift and accurate verification of voters' identities through fingerprint authentication. Upon successful verification, the system dispenses indelible ink onto the voter's finger, serving as a visible marker of participation in the electoral process. Conversely, unauthorized attempts trigger an alert mechanism, signaling the system to deny access and notify relevant authorities. Moreover, the project places a strong emphasis on user experience and accessibility. A user-friendly interface, comprising a mobile application and intuitive feedback mechanisms, ensures that voters of all backgrounds and abilities can engage with the system seamlessly. Collaborative efforts with election authorities and stakeholders further enhance the system's compatibility with existing electoral infrastructure, facilitating its widespread adoption and integration into electoral practices.

II. LITERATURE REVIEW

Automated nail polish machine

The invention relates to an automated electronic device for painting and drying fingernails, which allows the user to select the desired color and which can be carried by the user owing to its light weight. In one embodiment, the device includes a sensor which detects when a hand has been inserted into the machine and activates the switching-on of the device, and an LED touchscreen which allows the user to select the nails to be painted and the colour to be used without requiring the assistance of specialised personnel and which informs the user both visibly and audibly of the process being performed. In another embodiment, the device includes infrared capacitive sensors that detect the difference between the surface of the finger and the nail and a computer or processor which guides and controls the ink head that paints the surface of the nail. In yet another embodiment, the invention includes a device that blows air towards the nails and subsequently applies a beam of ultraviolet light for the purpose of rapid and uniform drying. Once one hand has been finished, the device informs the user to insert the other hand both audibly through a horn speaker and visibly on the LED screen, so that the process can be repeated.

NON-CONTACT NANOLITER AND PICOLITER LIQUID DISPENSING

This paper presents an introduction to non-contact dispensing technologies gaining increasingly importance in numerous application fields, ranging from the life sciences and medical applications to industrial fabrication. Besides a brief overview on typical applications the basic dimensionless numbers to describe droplet breakup are introduced. Based on this formalism criteria for droplet breakup are given and a classification of droplet dispensers according to their

working principle is proposed. Examples of dispensing devices are presented for selected applications and it is shown how these fit into the proposed classifications schemedispenser circuit, facilitating the refinement of its design and enhancing its reliability and efficiency in real-world applications.

A CALIBRATION-FREE, NONCONTACT, DISPOSABLE LIQUID DISPENSING CARTRIDGE FEATURING AN ONLINE PROCESS CO

We present a noncontact liquid dispenser that uses a disposable cartridge for the calibration-free dosage of diverse biochemical reagents from the nanoliter to the microliter range. The dispensing system combines the advantages of a positive displacement syringe pump (responsible for defining the aliquot's volume with high accuracy) with a highly dynamic noncontact dispenser (providing kinetic energy to detach the liquid from the tip). The disposable, noncontact dispensing cartridge system renders elaborate washing procedures of tips obsolete. A noncontact sensor monitors the dispensing process to enable an online process control. To further increase confidence and reliability for particularly critical biomedical applications, an optional closed-loop control prevents malfunctions. The dispensing performance was characterized experimentally in the range of 0.25 to 10.0 µL using liquids of different rheological properties (viscosity 1.03–16.98 mPas, surface tension 30.49–70.83 mN/m) without adjusting or calibrating the actuation parameters. The precision ranged between a coefficient of variation of 0.5% and 5.3%, and the accuracy was below ±10%. The presented technology has the potential to contribute significantly to the improvement of biochemical liquid handling for laboratory automation in terms of usability, miniaturization, cost reduction, and safety.

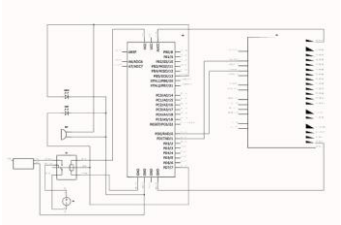
III . METHODOLOGY

The methodology involves designing a non-contact voting ink dispenser system with fingerprint verification. It includes selecting appropriate components, such as a fingerprint sensor, microcontroller, solenoid, and Bluetooth module. Circuit design and simulation are conducted using EasyEDA software. Hardware assembly follows, integrating components and ensuring functionality. Testing verifies system performance, and adjustments are made as needed for optimization.

KEY COMPONENETS

1.ATMEGA 328 MICROCONTROLLER
2.BLUETOOTH MODULE
3.SOLENOID
4.BUZZER
5.FINGERPRINT SCANNER
6.LED
7.RELAY
8.USB PORT

CIRCUIT DIAGRAM



WORKING

The non-contact voting ink dispenser system employs biometric verification via a mobile device, using a fingerprint sensor. Upon successful verification, a Bluetooth module transmits the signal to the microcontroller. The microcontroller grants access to the voting interface and triggers the solenoid for ink dispensing. Feedback to the user is provided through the mobile application interface, ensuring a seamless and user-friendly experience. The system prioritizes security, with advanced biometric authentication and encrypted Bluetooth communication. Removal of the touch sensor and emergency switch streamlines the design while maintaining reliability and efficiency, setting a new standard for modern electoral systems

IV. WORKING MODEL

V. CONCLUSION

In conclusion, the non-contact voting ink dispenser system represents a significant advancement in electoral technology, offering a secure, hygienic, and user-friendly solution for conducting elections. By integrating biometric verification via mobile devices with innovative ink dispensing mechanisms, the system ensures the integrity and transparency of the voting process while enhancing voter confidence and participation. Its robust security features, streamlined design, and efficient operation set a new standard for modern electoral systems, paving the way for fair and democratic elections worldwide. Further research and development in this area promise to continue improving electoral processes and advancing democratic principles.

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