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Development of Barbot (Automatic Drink Mixer and Dispenser Machine)

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Abstract: ***In today's fast-moving, competitive industrial world, a company must be flexible, cost effective for its survival. In the manufacturing industries there is great demand for industrial automation systems. The industrial automation is necessary in order to streamline operations in terms of acceleration, reliability and system output. In today's economical world, automation plays gradually important role. This paper aims to develop a system, which can connect the machine to phone with android application using the Bluetooth module. Through this device, we can make different composition of drinks using the liquids in the container. In the available version, the machine is costly and not customizable. The system proposed in this paper is a solution for mixing of drinks in desired composition where recipes for each drink is fed in the application , all one has to do is to select the name of the drink. The technology behind this automation and IOT. The system deals with the connection of phone and the machine. Each dispensing tube has a connected motor (Pump) which is driven by relay. The mixed drink is finally collected in the container at the base. The command from the graphic based android application is sent to the microcontroller of the machine and the device functions accordingly.***
Keywords: Raspberry pi 3, Android, Relay, IOT.

I. INTRODUCTION

The brain of Barbot is a configurable Twitchy microcontroller board. The Twitchy, in turn, is based on the Raspberrian jessie platform, a collection of development tools based on open-source hardware designs and software. Pi-based devices interact with the world through attached sensors, controllers, motors, and other actuators. Pi-3 is an ideal robot development environment. Bot has its heart as a Raspberry-pi chip running the python coding environment and optimized to drive actuators and sensors. The control panel is an android-based application. A peristaltic pump uses bearings that, when they turn, put revolving pressure on a tube and force liquids onward, the way you would force toothpaste out of a tube. Peristaltic pumps are commonly used in dialysis machines to transfer blood, because the parts that squeeze the tube never touch the liquid, thus keeping it from being contaminated. To initiate drink making, you need to select it from the menu of the graphical user interface based application. The phone is connected to the device with the help of Bluetooth technology.

II. LITERATURE SURVEY

A. Title

An automated multifunctional liquid dispensing machine.

1) *Author:* Qiong Shen | Timothy N. Chang |
2) *Abstract:* In this paper the implementations of micro-line drawing function of the SmartPin is discussed. SmartPin is a self-sensing liquid aspiring/dispensing pin originally intended for DNA/protein microarray applications. For non-contact, computer controlled drawing of microlines and other features, two approaches, the spot-sequence and liquid-column-sweeping are considered and tested. Multi-threading real time control implementation is discussed along with operation specifics. Drawing capability of the SmartPin is experimentally verified by generating 2-mm lines and lmm-side squares with 3xSSC salt buffer solution of 0.3% fluorescent Cy-3 dye. Scan results confirm the non-contact, micron-sized drawing capability of the SmartPin.

B. Title

Automatic liquid mixing and bottle filling.

1) *Author:* SwapnilKurkute |Akshay Kulkarni | Mahesh V. Gare
2) *Abstract:* In today's fast-moving, competitive industrial world, a company must be flexible, cost effective for its survival. In the manufacturing industries there is great demand for industrial automation systems.The industrial automation is necessary in order to streamline operations in terms of acceleration, reliability and system output. In today's economical world, automation

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plays gradually important role. In our paper "Automatic Liquid mixing and Bottle Filling" is controlled using programmable logic controller (PLC) and SCADA is used for visualizing the system. This paper proposes a mixing and filling management system for industries which is complete application of automation.It's controlling and monitoring makes the system easily accessible and alert the operator in the case of any fault or errors The main aim of the paper is to plan, develop and test the real time implementation of PLC, SCADA systems for ratio control based liquid mixing and bottle filling.

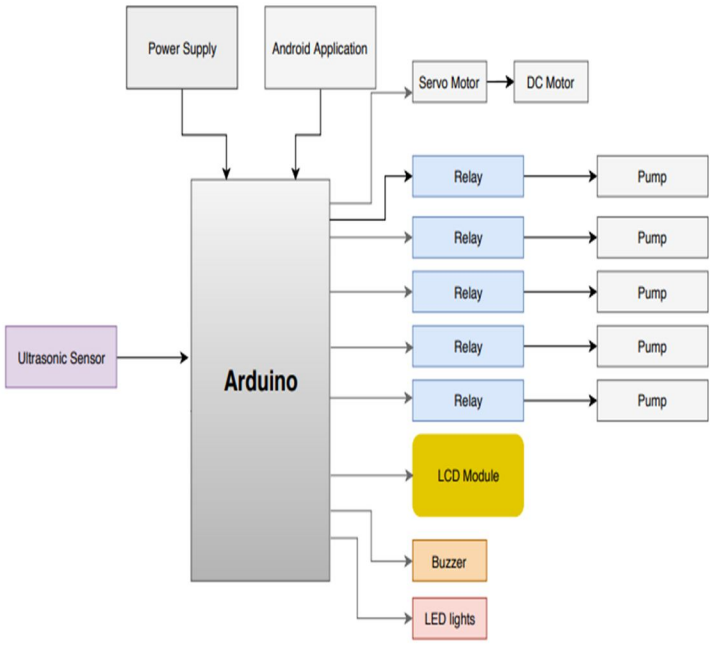
C. Title

A self-adjusted precise liquid handling machine.

1) *Author:* Yaxin Liu | Chen Liguo | Lining Sun | WeibinRong
2) *Abstract:* In biomedical areas, such as protein crystallization, drug discovery and medical diagnostics, thousands of reagents with different viscosities need to be transferred or dispensed in range. Most of the commercial automated liquid dispensing system need to be calibrated through experiment to accurately dispense liquids when the reagents viscosities change, which is time consuming and less accurate. In this paper, an intelligent precise liquid handling system was developed, in which Finally, experiments results are presented with different dispensing volumes, coefficient of variance (CV) has been shown to be below 3% at 1µl and approach 4% at 100 ml.

III.METHODOLOGY

The project is to create a machine which sucks liquid from the stock and makes a drink. The drink is made as per the user's choice. We can have this machine in home, office, parties, schools, etc. The device is connected to phone with the help of Bluetooth and the graphical user interface based application is used to control the device. To make this possible we use Raspberry pi-3 as a brain for the bot with its fast Bluetooth technology we can communicate with the device. The motors or pumps suck the liquid and using pipes dispensed in the container accordingly.



Block Diagram

1) *Proposed work:* Proposed system has been in different aspects of development in previous various projects. Suction of liquids and mixing using the servo has proven excellent results. The system mentioned in this paper has different approach for sucking and mixing of liquids for the making of a single drink. The Pi works well with the relays and sensors are compatible with the micro-controller. The LCD is also connected to display the outputs of the machine while the drink is being prepared.

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A. Advantages

1) Obtain the best mixture proportion , hence taste is retained
2) Cleaning of tubes after each drink, no persisting aftertaste.
3) Personalized service, as custom drinks can be made using the custom menu.
4) Low power consumption.
5) Stirring Options for drink

B. Disadvantages

1) Hardware modifications are required for more number of base liquids.
2) Manual operation is not possible.
3) Heating or cooling of drink is not available.

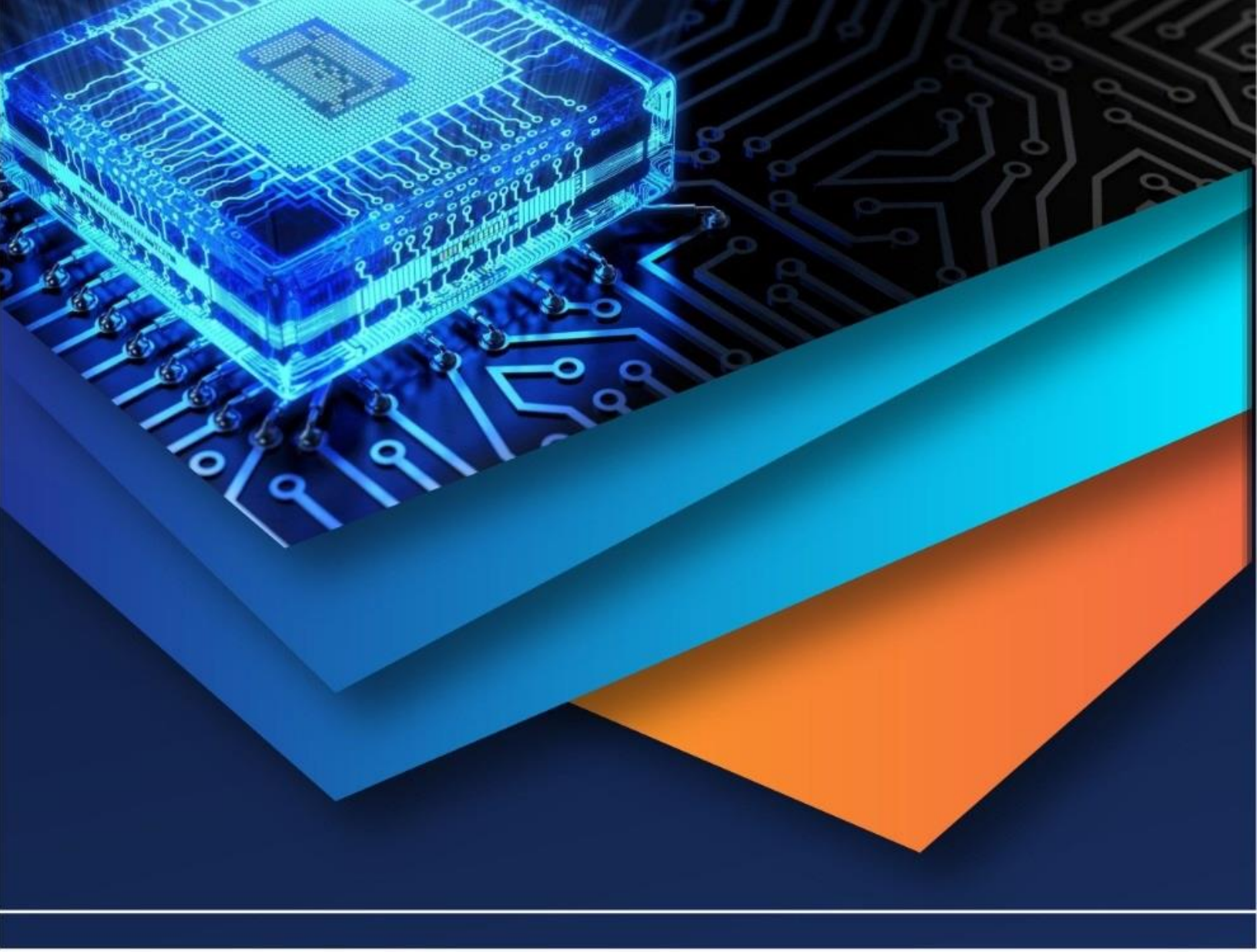
IV. CONCLUSION

The proposed system will be able suck liquid from containers at the base .The drinks will be made according to the menu in the application. No error is generated while connecting the device with the phone using Bluetooth technology. This makes easy to make drink, dispense and stir without any manual operation just have to enjoy your drink.

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