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AJAX BOT (VIRTUAL TEACHER)

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Project Synopsis

For

RTU HACKATHON 2018

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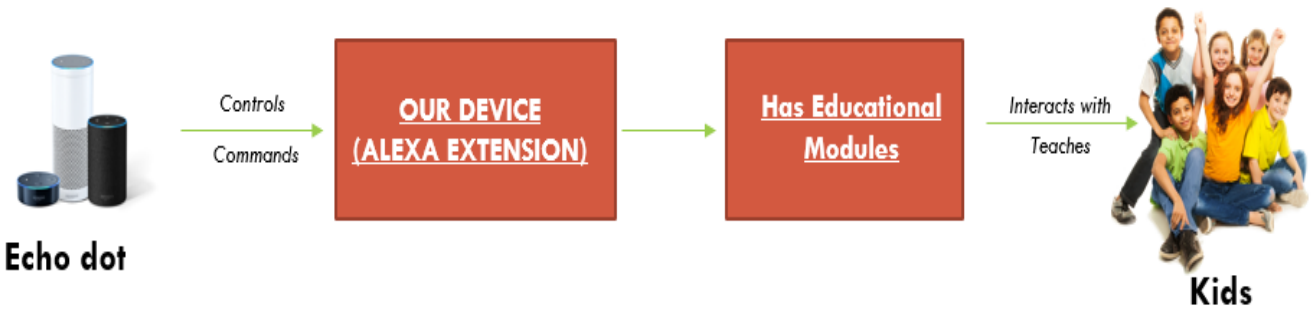
OCTOBER, 2018

Abstract

In this day and age of technology where everything is being automated its only appropriate to try to apply the same in the field of education as well. With the increasing demand of rapidly increasing users to carry out all tasks over the internet, IoT has become the latest trend as well. Automation using AI and ML of in market personal assistants and IoT using NODEMCU shield is exactly what we have done. We have made a Virtual Teacher that can be given command over voice alone using any personal assistant and in our case Amazon Alexa. Our virtual teacher has preloaded modules which can impart knowledge to kids in a fun way. **Our main aim is to change the face of education as known by making a fun and interactive product for kids which can interact with them and teach them as well.**

INTRODUCTION

Our project is called “AJAX BOT”. It is a virtual teacher that can be controlled using the personal assistants that are popular nowadays. In our project we have used the popular Amazon assistant Alexa. Our project aims to blend the AI of personal assistant (Alexa) with our IoT enabled Virtual Teacher. Our Virtual Teacher is capable of interacting with kids, singing poems and at the same time teaching them subjects like math and logical reasoning in a fun and interactive manner. As mentioned earlier our project is a blend of AI of the assistant and IoT which basically means that our robot will be wireless and can be controlled by giving voice commands to the personal assistant and in this case, Alexa. Thus, our virtual teacher can be controlled completely even if it is in a different room than Alexa.



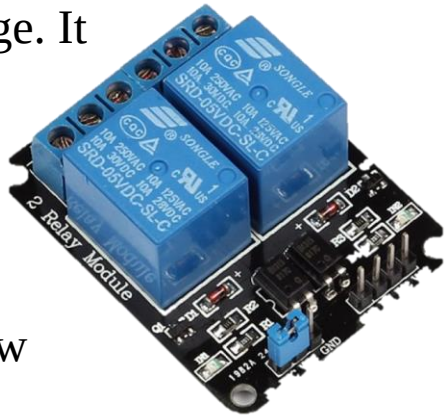
S. No.	Product	Price	Qty	Total
1.)	AMAZON ALEXA	4500	1	4500
2.)	NODEMCU	350	1	350
3.)	4 Channel Relay	250	1	250
4.)	Voice Module	1500	1	1500
5.)	Jumper Wires	6	20	120
6.)	IR Module	80	1	80
7.)	Walking Mechanism	1000	-	1000
8.)	Misc.	500	-	500

Materials Used and Cost Estimate:

TOTAL EXPENDITUREE: 8300/-

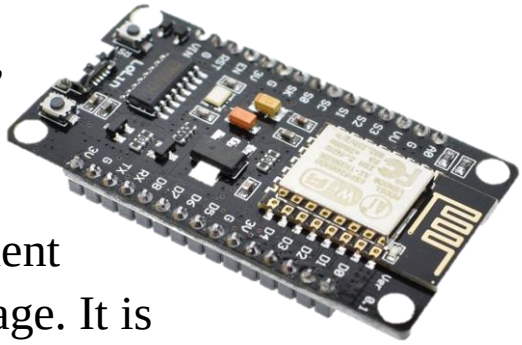
COMPONENTS

RELAY MODULE: Introducing the Relay Module. A relay is an electrically operated switch of mains voltage. It means that it can be turned on or off, letting the current go through or not. Controlling a relay with the Arduino is as simple as controlling an output such as an LED.
The relay module is the one in the figure below



AMAZON ECHO: Amazon Echo (shortened and referred to as Echo) is a brand of smart speakers developed by Amazon.com. The devices connect to the voice-controlled intelligent personal assistant service Alexa, which responds to the name "Alexa". This "wake word" can be changed by the user to "Amazon", "Echo" or "Computer".

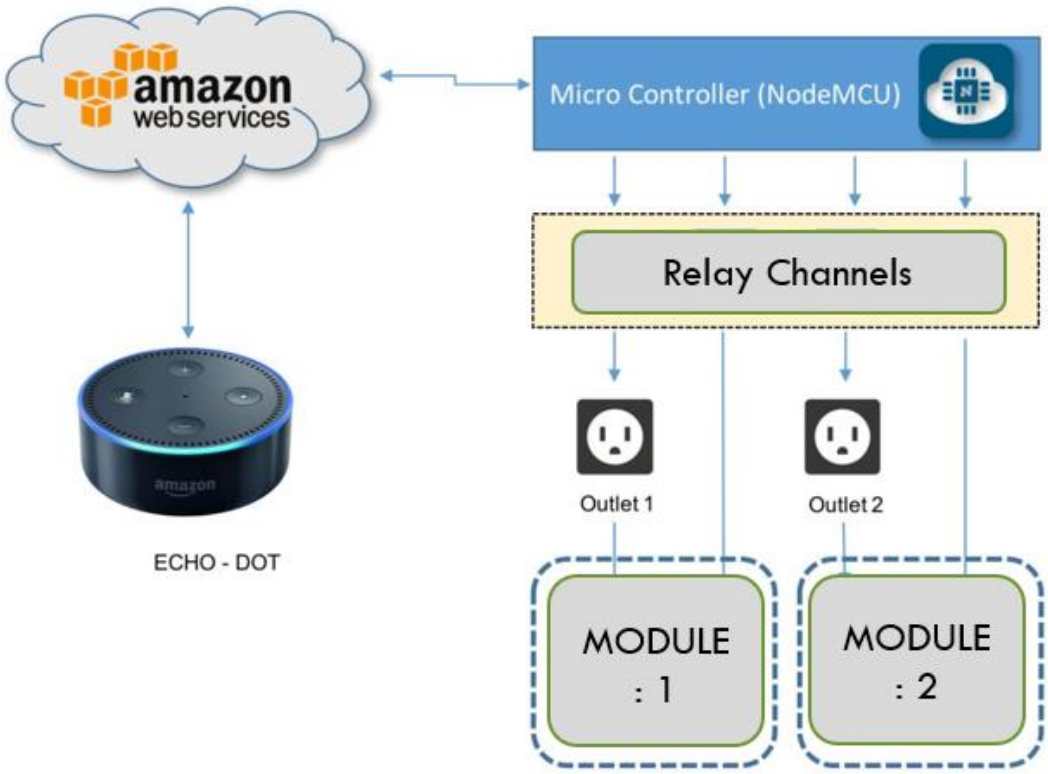
NodeMCU: NodeMCU is an open source IoT platform. It includes firmware, which runs on the ESP8266 Wi-Fi SoC from Espssif Systems, and hardware which is based on the ESP-12 module. The term "NodeMCU" by default refers to the firmware rather than the development kits. The firmware uses the Luascripting language. It is based on the eLua project, and built on the Espressif Non-OS SDK for ESP8266. It uses many open source projects, such as lua-cjson, and spiffs.



PROJECT WORKING

Methods Used :-

We have used the AI of the assistant and the ML algorithms it uses to function and blended it with IoT. Our robot is connected to the WIFI using the NODEMCU Shield and so is the ALEXA (personal Assistant). After programming the NODEMCU correctly we can freely control the robot by giving voice commands to Alexa. Once the command is given to Alexa it sends the command to NODEMCU which makes the robot function as per the command.



WHY THIS PROJECT?

The innovation factor of our project is using a technology that is still new in the market and new to Indian population but has the potential to become a household item/Educational device in coming years. We think IoT is the future of our society and would be an integral part of the lives of humans just few years from now.

Our project is an innovative device that uses the technology of IoT and AI of the assistant to function and at the same time it uses all this technology to teach kids. It is something that has never been done before. This is still a developing field, and we feel we bring a lot to the table with our product.

Our product can interact with kids and teach them subjects like math and logical reasoning in a fun manner. We plan to develop it further and add more modules that can enable our users to develop skills and make our project a prized contribution to digital India.

FUTURE PROSPECTS AND CONCLUSION

We were able to successfully test our model in its first phase. It was able to give a clear introduction of itself and upon giving command it even asked questions relevant to the subject. It also had a fun feature which enabled it to dance thus making it a little more interactive and fun for kids.

We also, found that we could improve our project greatly by working more on the Alexa Skill Development Kit and are currently working on this to find new ways to improve our project.

In conclusion, we feel our project can change the face of education as we know by its innovative approach and its interactive and fun behavior. There's still a lot of effort we need to put into the product to make it an even better product which can impart more skills to the users and teach more complex stuff but we are still content with what we have achieved in a short period of time.

REFRENCES

https://github.com/kakopappa/arduino-esp8266-alexa-wemo-switch