JOMO KENYATTA UNIVERSITY OF AGRICULTURE AND TECHNOLOGY
Setting trends in Higher Education, Research and Innovation

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INTRODUCTION.

In our increasingly connected world, the integration of technology has become an integral part of our daily lives. One area where technological advancements have been particularly transformative is in the realm of robotics and automation. We are excited to present a project proposal that combines cutting-edge technology and innovative engineering—a WiFi-enabled communicating robot car equipped with a distance-measuring sensor.

The primary objective of this project is to create a versatile, remotely controllable robot car capable of accurately measuring the distance it travels in real-time. This robot car will utilize a high-precision ultrasonic sensor, meticulously mounted on its chassis, to provide accurate distance measurements. The integration of WiFi connectivity will enable seamless communication with external devices, such as smartphones allowing users to monitor and control the robot.

The potential applications of this project are diverse and far-reaching. From educational purposes, where students can learn about robotics and sensor technology, to practical use cases in industries such as logistics, surveillance, and even autonomous navigation, the possibilities are extensive. Moreover, this project aligns with the current trend towards the Internet of Things (IoT) and smart devices, contributing to the advancement of automation and data-driven decision-making.

Together, we aim to enjoy the learning process and appreciate the application of microprocessors.

COMPONENTS LIST.

	ITEM	PRICE
1.	ESP 32	2000/=
2.	Robot Car Chassis	3000/=
3.	Ultrasonic Sensor	200/=
4.	Breadboard	250/=
5.	Battery Holder	150/=
6.	Batteries	200/=
7.	Male jumper wires(40pcs)	120/=
8.	3.3 V regulator	150/=
	Total	6070/=

Our project centers around the utilization of an ESP32 microcontroller, complete with a WiFi module, as the central processing unit of our robot. This dynamic microcontroller will be intricately linked to four 6 Volt motors, each driving a wheel of the robot's chassis, and an ultrasonic sensor securely mounted on the chassis itself.

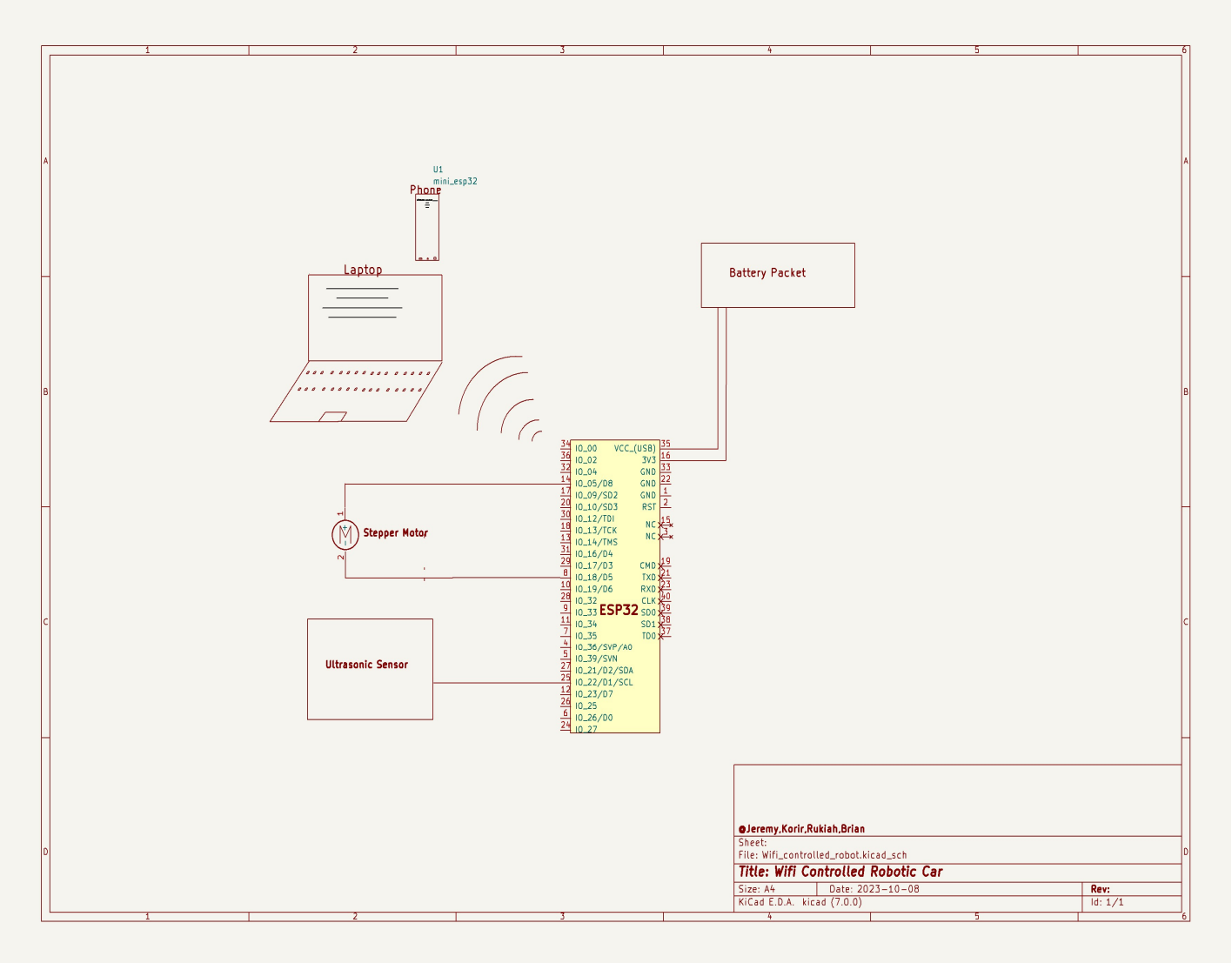
The ESP32 microcontroller, equipped with WiFi capabilities, will establish a wireless connection, enabling seamless communication with external devices such as smartphones. Users will have the power to initiate the robot's movement via their phone, issuing commands for the car to start its journey.

As the robot car embarks on its mission, the ultrasonic sensor takes charge, continuously measuring distances from its departure point. Through the WiFi connection, real-time updates on

the distance traveled will be relayed to the user's phone. Additionally, a pre-set final distance parameter will be defined, and once the robot car reaches this threshold, it will transmit a termination of movement notification to the user.

The functionality of the ultrasonic sensor lies in its ability to emit high-frequency sound waves and record the time it takes for the echo to return. This time measurement serves as a reliable proxy for calculating the distance between the robot and its point of origin. This project not only showcases the fusion of advanced technology but also offers practical applications across various fields, revolutionizing the way we interact with and monitor robotic device.

Kicad Schematic.



Week	Activity	Date of Completion
1	Acquiring of parts	17th October 2023
2	Doing the hardware connection and software onboarding	24th October 2023
3	Implementation	31st October,2023
4	Presentation	15th November,2023