# Princess Sumaya جامعــة University الأميـرة سميّـة for Technology

# AriBot – Irrigation Robot

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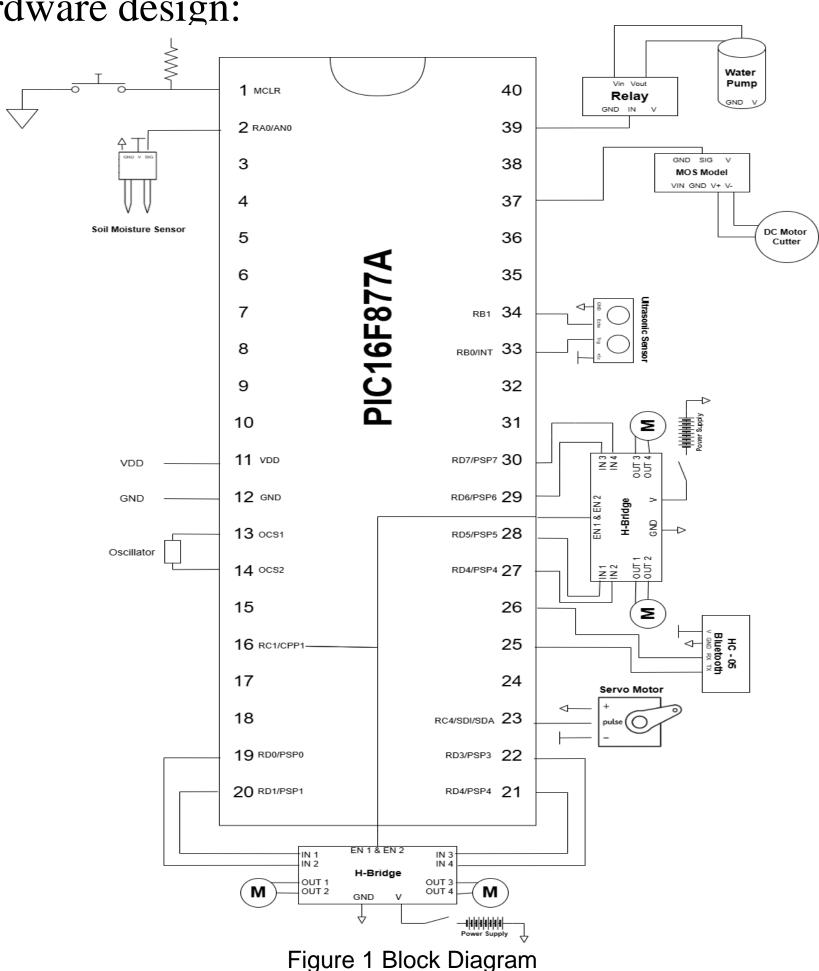
### Introduction

AgriBot is a multifunctional robotic system designed to automate lawn maintenance and promote sustainable gardening. It features automated grass cutting, real-time soil moisture monitoring, and intelligent irrigation that activates only when needed. Equipped with DC and Servo motors, sensors, and a water pump. Users can control it remotely via Bluetooth using a smartphone, making lawn care effortless and ecofriendly.

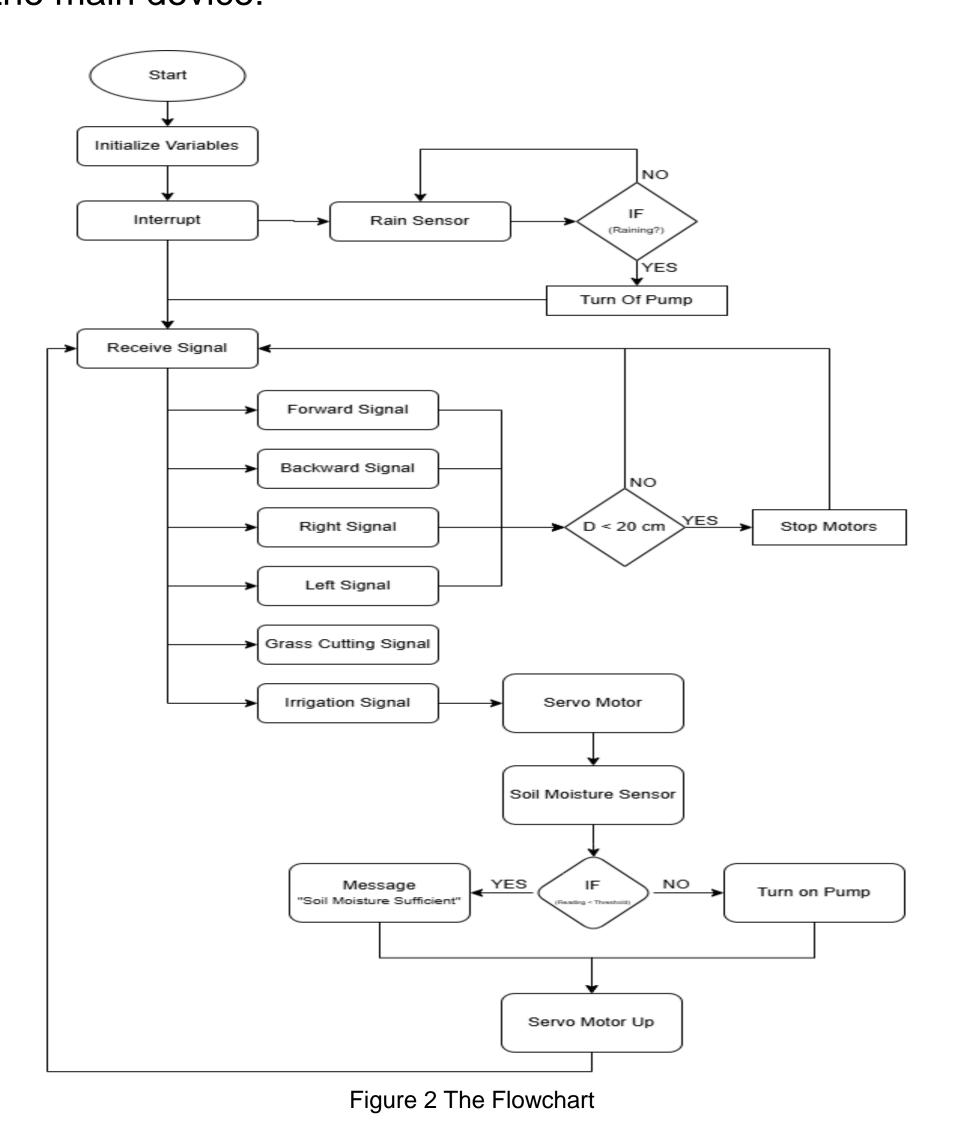
# Design

The design of AgriBot centre around the seamless integration of hardware and software components to achieve autonomous lawn maintenance and smart irrigation.

The following if the block diagram that shows the sematic of the hardware design:



The following flowchart provides an insight of the functionality of the main device:



### Results

AgriBot efficiently performed autonomous mowing and smart irrigation. Soil and rain sensors optimized water use, while Bluetooth control enabled smooth remote operation. The system reduced manual effort and conserved resources, proving effective for sustainable lawn care.

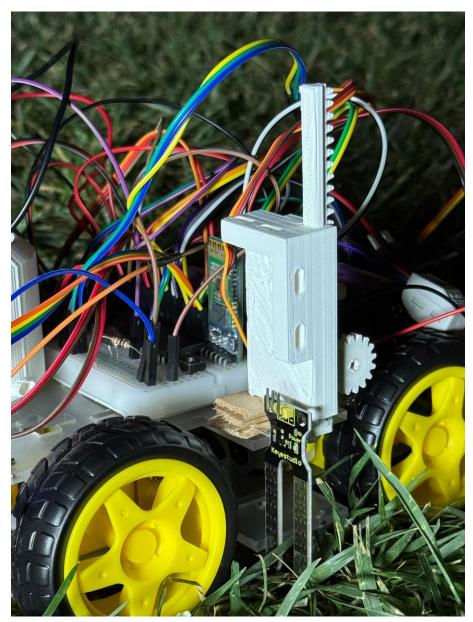


Figure 3 Servo Motor with Soil Moisture Sensor

Figure 4 Front View (Ultrasonic Sensor)





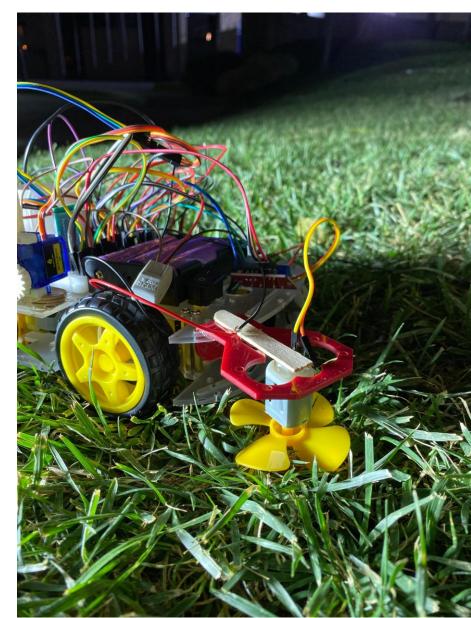


Figure 6 DC Motor with Grass Cutter





## Conclusion

The AgriBot project successfully demonstrates the integration of embedded systems, robotics, and smart agriculture in a single multifunctional platform. Using a PIC16F877A microcontroller, various sensors, motors, and wireless communication modules, AgriBot efficiently performs essential lawn care tasks including grass cutting and irrigation. The robot responds to real-time environmental inputs—such as soil moisture levels and rainfall—ensuring resource-efficient operation and promoting sustainability.