

SMART STREET LIGHTS

Illuminating our city with intelligence

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Agenda

- Introduction and Purpose of the project
- Components used
- Circuit Diagram
- Results
- Prototype vs Realtime Implementation
- Conclusion and Future scope

Introduction and Purpose of the project

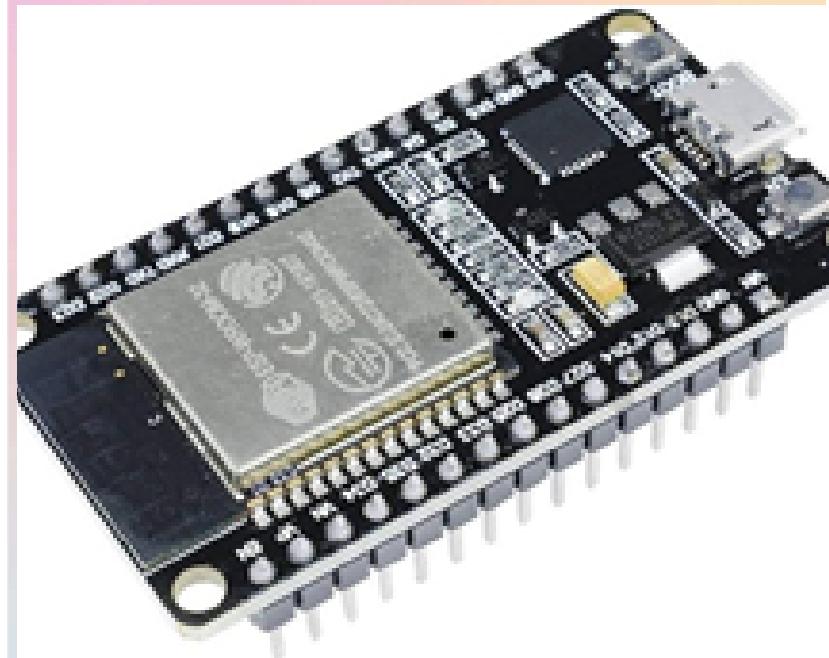
- The purpose of this project is to create an intelligent street lighting solution that dynamically adjusts lighting levels based on ambient light conditions (detected by the LDR) and presence of vehicles or pedestrians (detected by the IR sensor).
- Unlike traditional street lighting systems that operate on fixed schedules or manual switches, the smart street light system **autonomously** adapts to environmental factors, **conserves energy**, and improves visibility and safety on the streets.

Components Used

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- **ESP32**
Microcontroller
- motion sensors
- ambient light
- IR sensors
- LEDs
- Resistors
- Jumper wires

ESP 32
Microcontroller



Components used

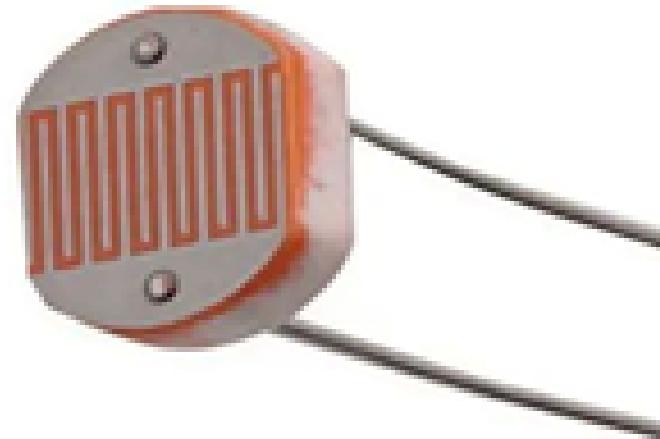
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LEDs



Components used

IR Sensors



LDR Sensor

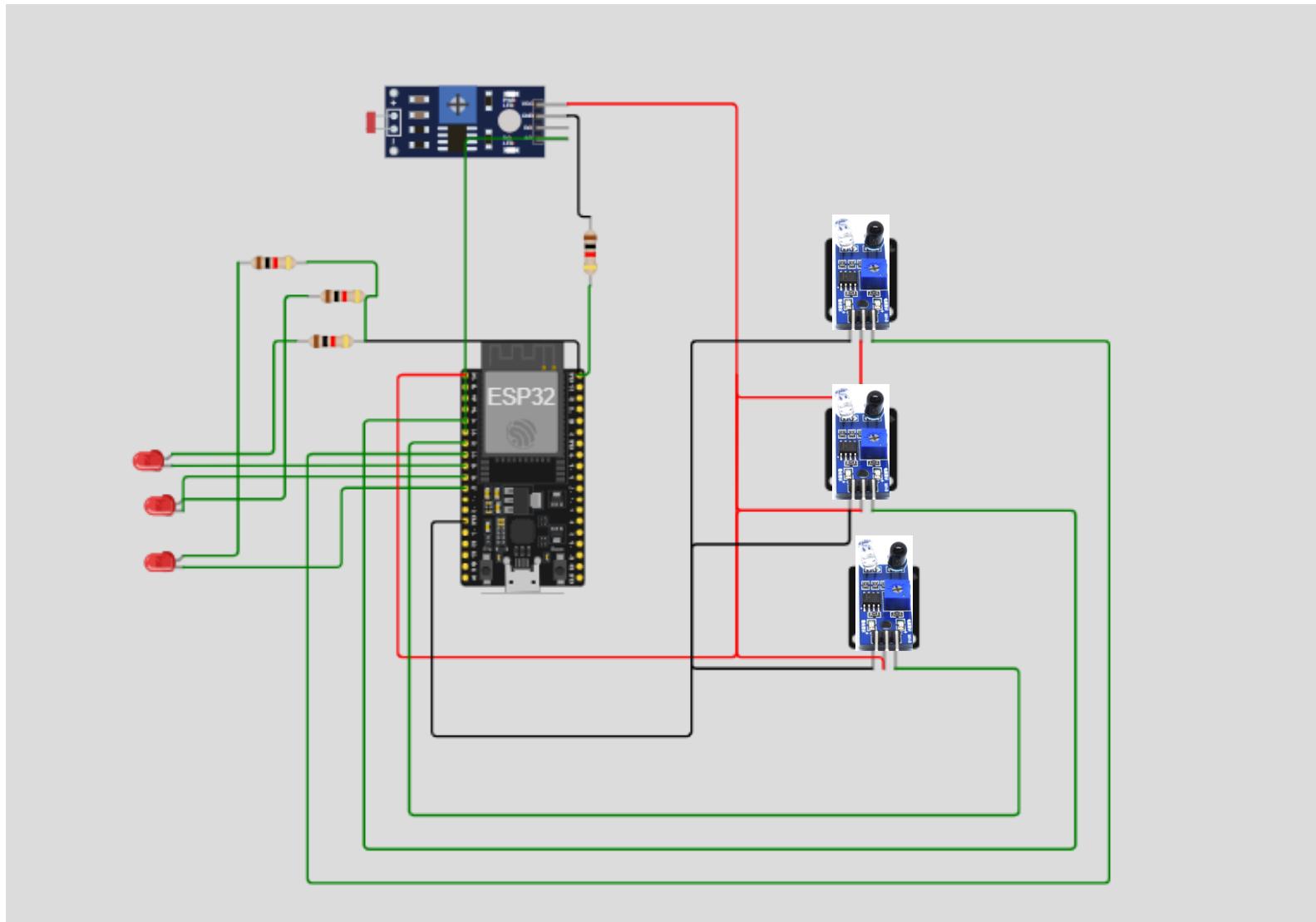
Components used

Jumper wires



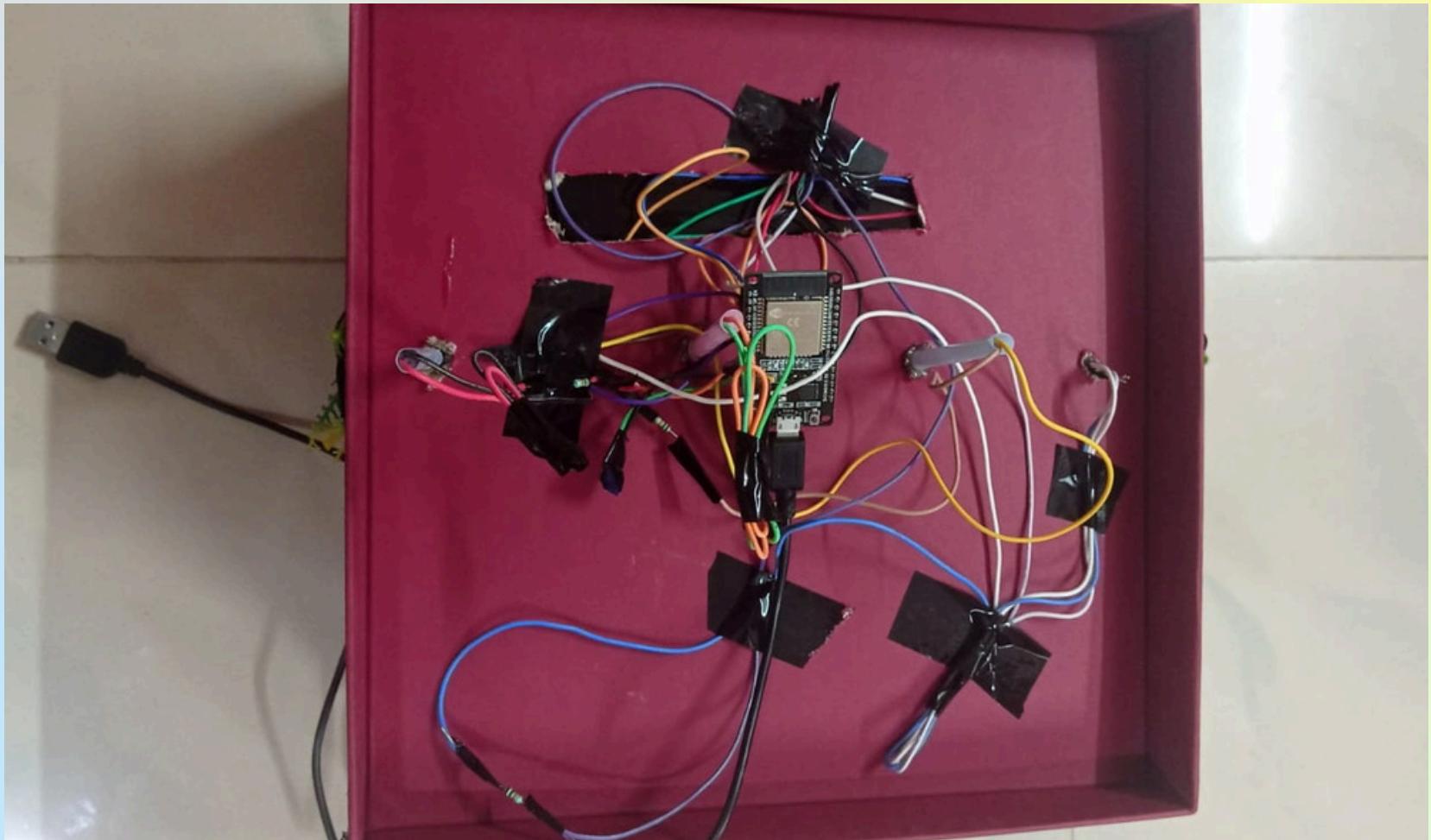
Resistors

Circuit Diagram



Results

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Results

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Prototype vs Real time Implementation



Jumper Wires



Multicore Cables

LED VS 100w LED BULBS



Power: 0.5 W



Power: 100 W

IR vs RADAR

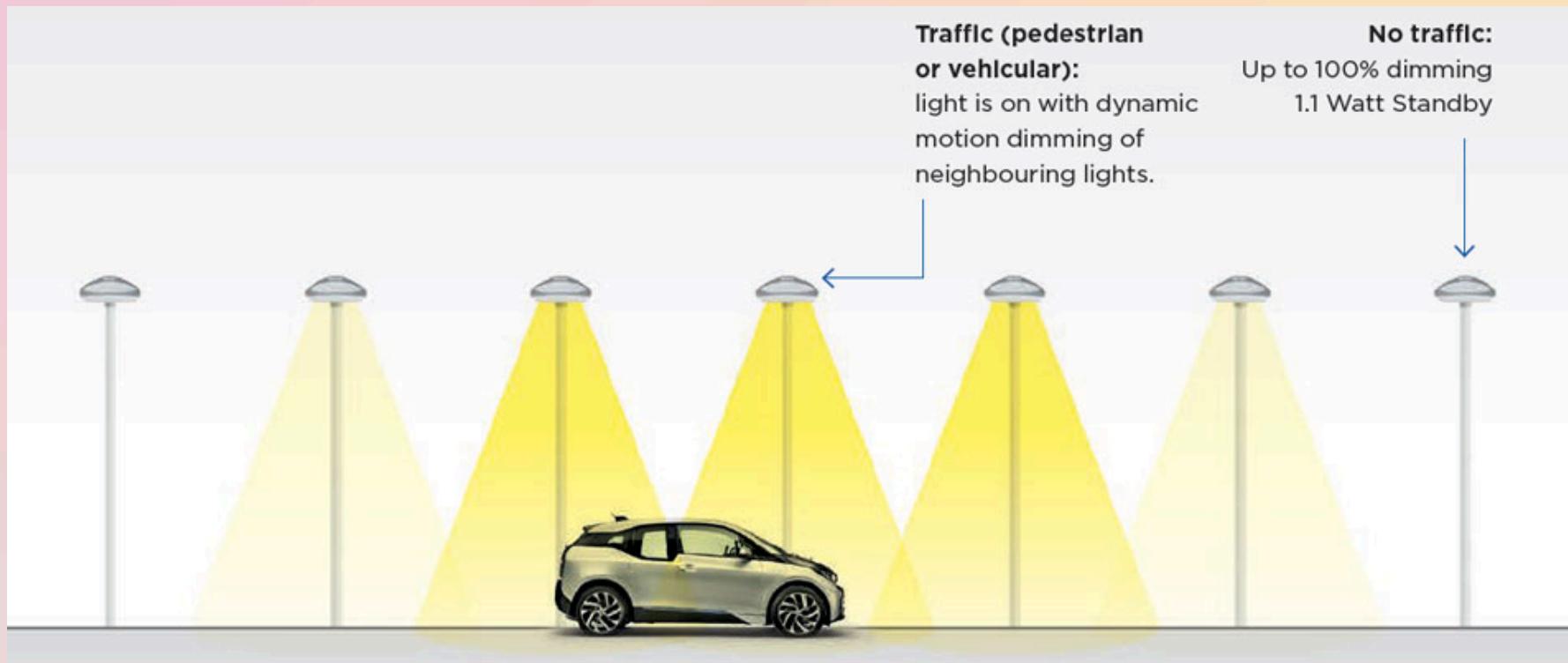


- Range: 20 meters
- Affected by environmental factors
- Do not provide speed or direction information



- Long Detection RangeIntensity(200m)
- All-Weather Functionality
- Detection of Movement
- Less Interference from Small Animals

REAL-TIME IMPLEMENTATION



Conclusion

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- The smart street light IoT project successfully demonstrates how integrating advanced IoT technology into urban lighting systems can lead to significant reductions in power consumption, enhanced operational efficiency, and improved public safety.
- By leveraging real-time data and intelligent controls, this project not only contributes to environmental sustainability but also provides a scalable and cost-effective solution for modern urban infrastructure.

Future Enhancements

- Future enhancements for the smart street light IoT project could include integrating renewable energy sources such as solar panels to further reduce dependency on traditional power grids.
- Additionally, incorporating advanced analytics and machine learning algorithms could optimize lighting schedules and predictive maintenance even further create a more comprehensive smart city ecosystem, providing holistic benefits and fostering smarter, more responsive urban environments.

Thank you!

A Presentation by Shreenidhi G L and Soniya V
