DETECTION OF

FAULTY POWER EFFICIENT STREETLIGHTS

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PROBLEM STATEMENT

01 Faulty streetlights create safety hazards on campus.

02 Risks include snakes, open gutters, and poorly lit walkways.

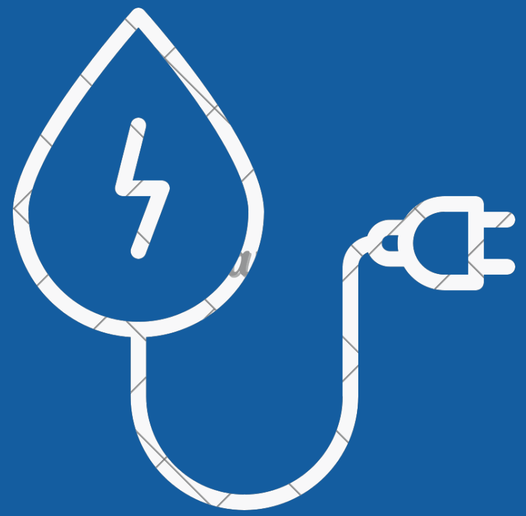
03 Increased danger for students and staff, especially after dark.

04 Fixed brightness causes excessive energy waste.

05 Strains campus resources and reduces sustainability.

06 Need for reliable, adaptive street lighting for improved safety and efficiency.

OUR OBJECTIVE ?



POWER EFFICIENT STREETLIGHTS

AUTOMATIC FAULT DETECTION

MOTIVATION/NEED

Electricity Use: Street lighting makes up 1% of India's electricity, with inefficiencies increasing waste.

Outdated Tech: Older street lights consume more energy than modern LEDs.

Poor Maintenance: Faulty lights often remain on, wasting energy.
Savings Potential: LED lights can cut energy use by 30%+ and improve lighting quality.

Higher Costs: Faulty lights raise electricity bills for municipalities.

Safety Issues: Poor lighting increases risks for pedestrians and commuters.

Environmental Impact: Inefficient lights contribute to higher emissions.

SMART STREET LIGHTING SYSTEM

50% Lighting with Metal Detection

1 LED always on at 50%, 2nd LED activates when a car is detected using proximity sensor.

Human Detection (PIR Sensor)

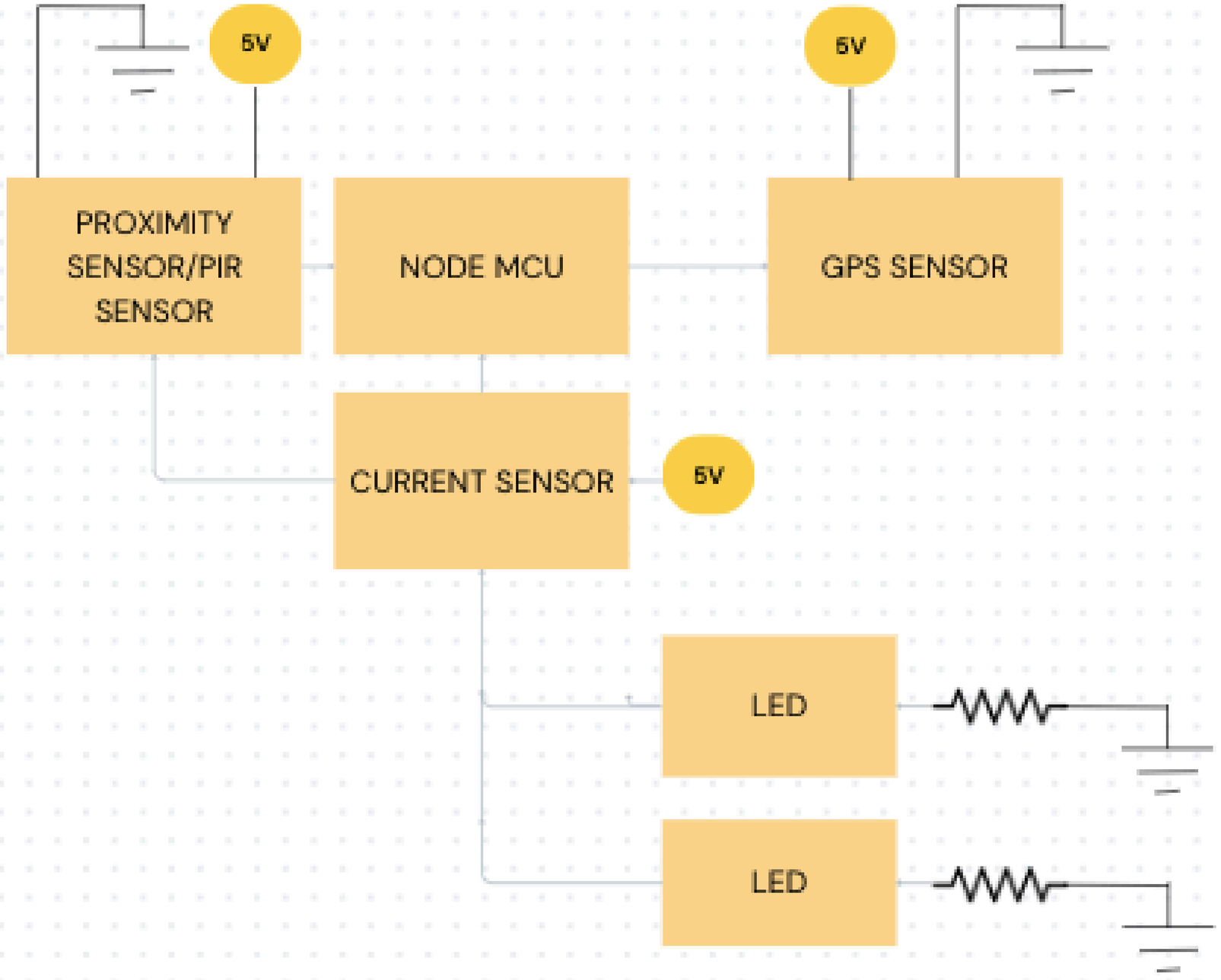
Lights brighten when pedestrians are detected.

Fault Detection:

Current sensor outputs a Boolean value for real-time fault monitoring.

NodeMCU Control:

Manages sensors and lighting adjustments for energy efficiency.


5V
5V
PROXIMITY SENSOR/PIR SENSOR
NODE MCU
GPS SENSOR
CURRENT SENSOR
5V
LED
LED

FUTURE SCOPE

GPS + ThinkSpeak IoT for location tracking and predictive maintenance.

- **GPS Integration**: *Tracks real-time location of streetlights.*
- **ThinkSpeak IoT**: *Stores and visualizes GPS data for remote monitoring.*
- **Predictive Maintenance**: *Analyzes performance data to flag potential issues before failures.*
- **Efficient Repairs:** *Enables quicker, targeted maintenance based on exact location data.*

HOW IS IT BETTER ?

90% LESS HEAT

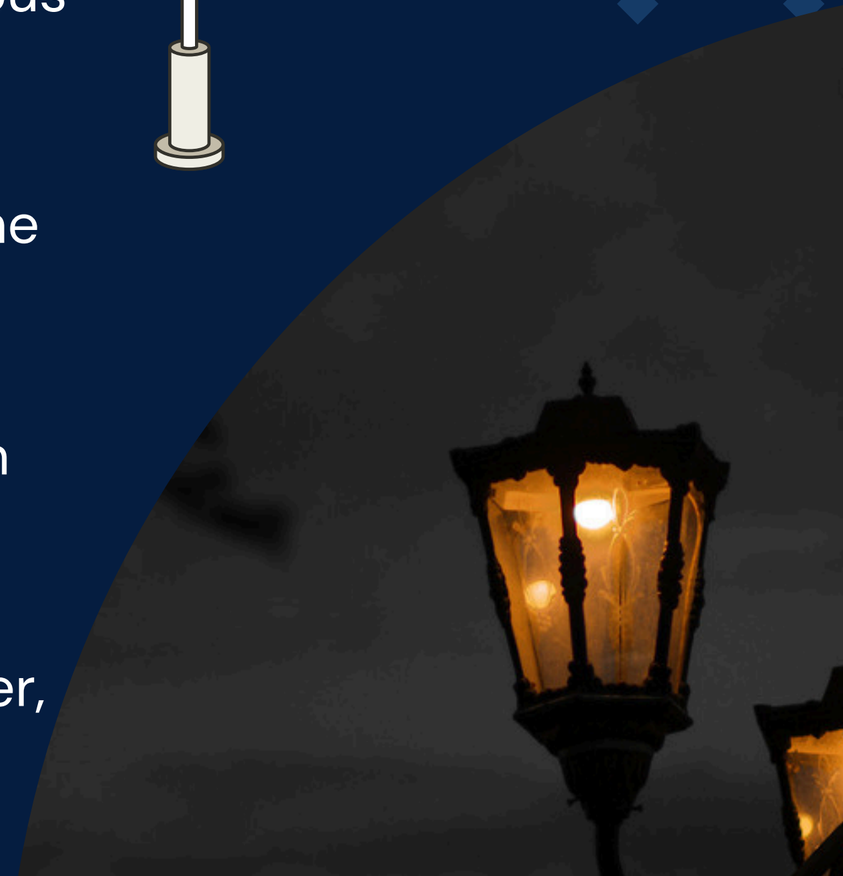
AND ATLEAST

50% LESS ENERGY CONSUMED

THUS DRASTICALLY REDUCING THE COST :)

CONCLUSION

- Our solution addresses critical safety concerns by detecting faulty streetlights in real time.
- Adaptive lighting reduces energy waste and enhances campus sustainability.
- Improved street lighting ensures safer walkways, reducing the risk of accidents and dangerous encounters.
- By implementing this system, the campus can enhance both security and resource efficiency.
- Investing in smarter lighting technology contributes to a safer, more sustainable environment for all.



QUESTIONS ?