ECODRIFTER

18% OF WORLD'S POPULATION LIVES IN INDIA , ONLY 4% OF THE WORLD'S WATER RESOURCE, WATER HERE IS AS PRECIOUS AS GOLD
DUE TO RAPID POPULATION GROWTH & URBANISATION , THE LIMITED WATER RESOURCES ARE CONTAMINATED WITH PLASTIC WASTE

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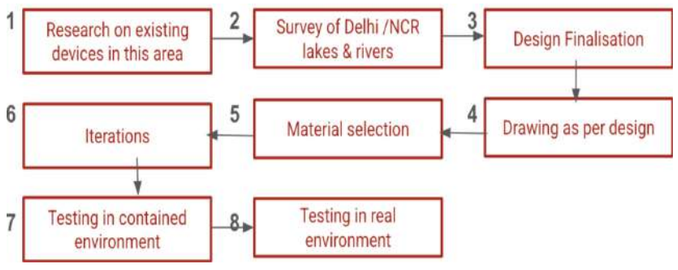
INTRODUCTION

OVER TIME, PLASTIC DEGRADES AND LEACHES HARMFUL CHEMICALS LIKE PHTHALATES, HEAVY METALS, AND CHLORIDES , WORSENING WATER CONTAMINATION.
DURING MY SURVEY OF RIVERS AND LAKES IN DELHI/NCR I FOUND PLASTIC WASTE TO BE A MAJOR PROBLEM.FUELED BY MY PASSION FOR CLEAN WATER BODIES, I BEGAN EXPLORING THIS FIELD, INSPIRED BY SCIENTISTS AND ENGINEERS COMMITTED TO WATER CONSERVATION.

OBJECTIVE

To address the problem, I have designed "Ecodrifter"—a low-cost, portable robot that removes floating plastic waste from water bodies.

METHODOLOGY



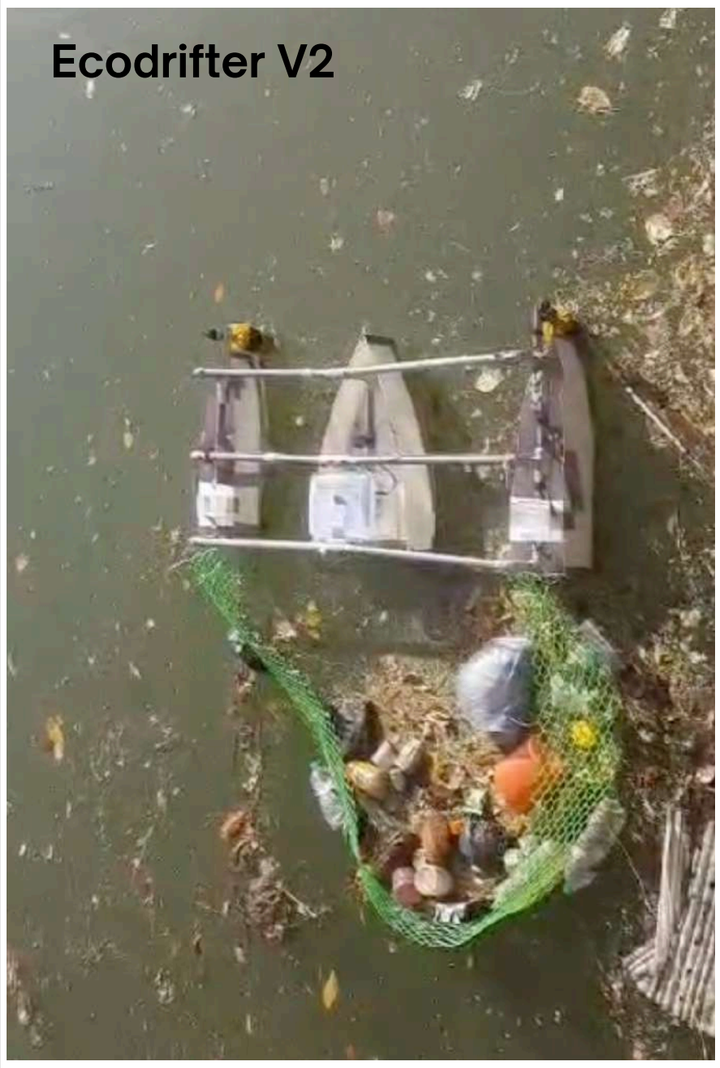
RESULTS/FINDINGS

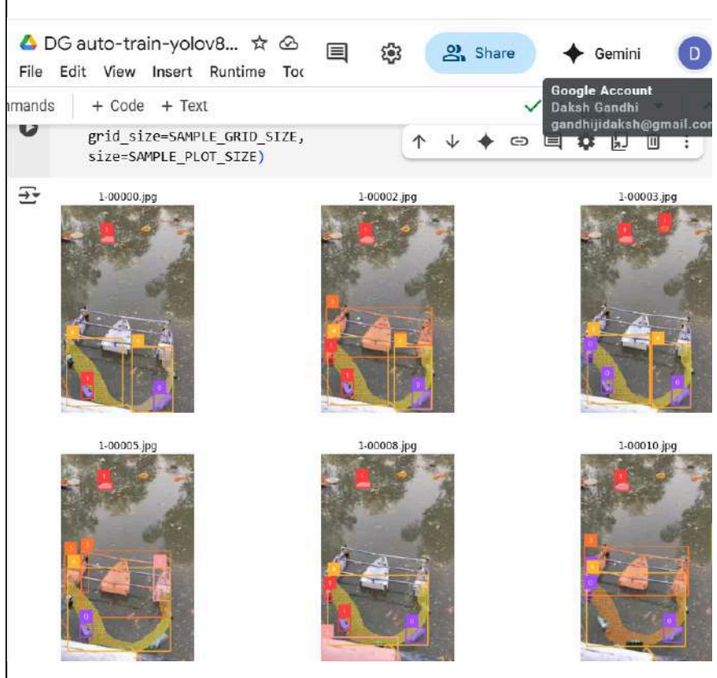
V1 :(had limitations, V2 was an improvement)

- The collection speed was slow
- Limited capacity(1-2 kg in one go)
- Unable to collect plastic accumulation on the banks
- 12 V batteries drain out quickly

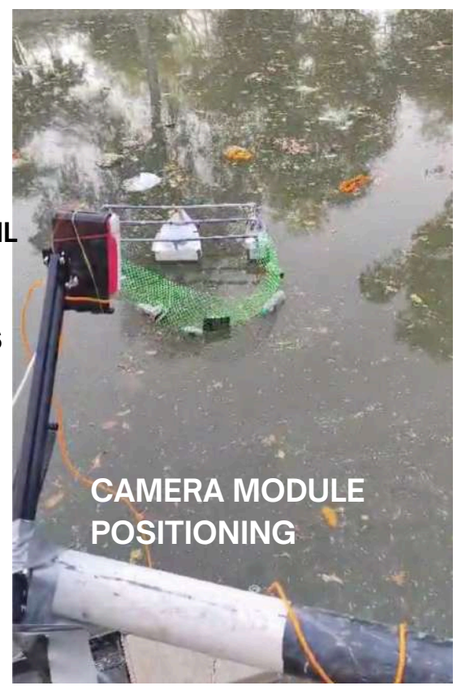
V2 :(had limitations, V2 was an improvement)

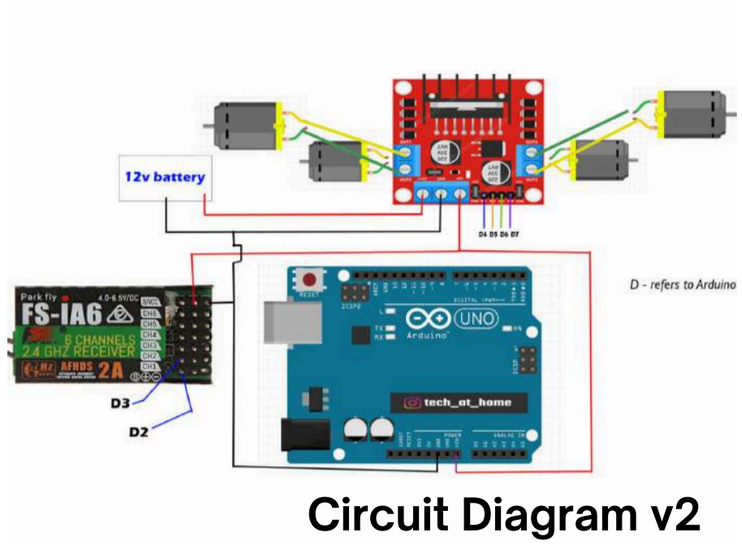
- 3-5 kg trash collected in one go
- Rotary brushes allow scraping against the banks
- Propellers get stuck into plastic mixed with sticks and other trash, thread locker & cases were used
- Raspberry pi camera module to detect plastic, early stages





TRAINING THE ML MODEL ON FLOATING PLASTIC IMAGES USING YOLO ALGORITHM





Circuit Diagram v2

ANALYSIS

CHALLENGES/IMPROVEMENT NEEDED

- Stronger propeller & fabricated body is needed as plastic is often mix with sticks, pooja related trash etc
- Batteries drain out easily , solar based recharging is needed
- Raspberry pi camera module to detect plastic, is in early stages, improvement needs to be done to make the device unmanned

REAL WORLD IMPACT

- Can be used in lakes, canals and urban water bodies
- Highly effective during religious festivals like Kumbh etc
- Unmanned device can increase productivity

CONCLUSION

- Device went through multiple iterations , the design and choice of material is critical sunboard -body, plastic net)
- Making the device autonomous, solar charging and stronger propellers are the next steps for this project
- Aim to clean the Rewari pump site completely in coming months
- One time cleaning is good but multiple such unmanned devices are needed to keep the water bodies clean which is tough in a populous country like ours
- Besides collection , the disposal and sorting of plastic waste is another huge challenge

INSPIRED BY "THE OCEAN CLEANUP"