

THE PROTOTYPE

The structural design of ATCB was based from the trash skimmer vessel that is used in removing rubbish from inland waterway. The boat of the project was patterned from a catamaran wherein it has two parallel hulls of equal size. The base of the project was designed to adapt the loads that it will carry. The traps were placed in front of the conveyor to corner the floating garbage. The conveyor was designed to be in an inclined position for more effective way of trash collection. The paddle wheels of ATCB were designed in each side of the boat, for better navigation.

ABOUT US

Currently, human do unnecessary activities to mother earth which leads to its poor condition. When population increases, the problems in garbage also level up. As time goes by, garbage disposal has been undoubtedly one of the main problems of every city in the Philippines. Humans produce about 300 million tons of plastic each year. More than 8 million tons of that plastic are dumped into the oceans and in 2017, an estimated of 5 trillion pieces of plastic littered in the seas. (Sciencing.com). People tend to throw garbage in the bodies of water without hesitation on how they can affect our mother earth. Improper disposal of garbage results to devastation of the bodies of water. Residential waste contains organic and inorganic waste that contributes to the reduction of water quality. Inorganic waste cannot be broken down by bacteria (non-biodegradable) such as plastics, rubbers, fabrics and metals causing the clogging in water ways, resulting to floods. In addition to that, since plastics are not biodegradable it is normally fragments into smaller pieces and unfortunately swallowed by marine organisms which are not healthy to human consumption. If improper disposal of garbage is not prevented, there will be a possibility that the total mass of plastic and other non-biodegradable waste may be greater than the total mass of fish.

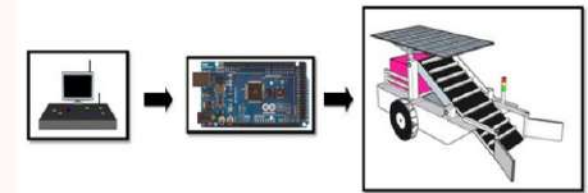
MEET THE LEADER



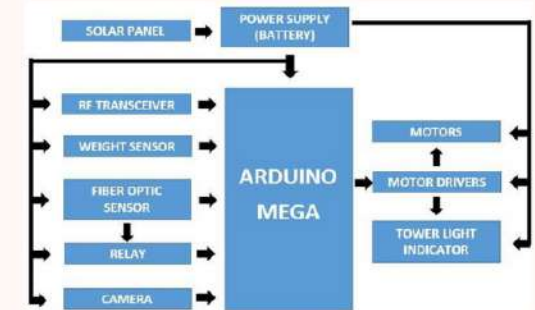
Engr. Danilo M. Miranda

As one of the senior faculty in Electronics department, Engr. Miranda leads a team of members of faculty to deliver a futuristic way to make the surrounding cleaner than before.

HOW DOES IT WORKS?



Project Conceptualization



The figure above shows how the project operates. The prototype is composed of power supply, microcontroller, motor drivers, motors, sensors and mechanical parts.

There are 3 power supplies in this project: 5v dc supply for the microcontroller, 12v dc supply for some motors; and a 24v dc supply for sensors and motor. The inputs are remote control and the sensors used.

To use the project, turn on the power of the ATCB. The power supply will turn on the microcontroller to run the whole system with the use of sensors, motors and drivers, and also turns on the RF Module as the transmitter and receiver of the remote control. For its input, turn on the remote control and the ATCB stack light green indicator will turn on (means the receiver and transmitter are connected). After connecting, the user can now navigate the ATCB using the remote control.

Navigate the bot using the navigation buttons on the remote control. The visual path of the bot will be seen in the remote control with the use of camera. Turn on the conveyor of the ATCB at the remote control and navigate the bot to collect floating garbage at the river.

If the bin is full, the red light indicator will turn on, indicating either the bin is full or the bin has reached its weight limit of 20kg, or both. When bin is full, the user should navigate the bot and return to its station to unload the collected garbage.

The removal of the garbage collected by the boat will be manual, and will be done by the user. The user will open the bin and remove the net bag from the bin and dispose the trash collected.