Remote-Control Raft Cleaner

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Globally, plastic pollution is an increasingly prevalent issue as it finds its way into rivers, waterways, and oceans. Floating plastic pollution aggregates in confined areas close to shore such as underneath jetties and bridges where there is limited safe conventional access. These areas are rarely cleaned and collect a high concentration of debris. To target this, a prototype small and portable remote-control raft capable of collecting floating waste was developed called the RCRaftCleaner. Unlike existing solutions to plastic waste, the compact size of RCRaftCleaner is specific for a smaller scale clean-up that is more thorough and targeted. The RCRaftCleaner is remote-controlled via a Bluetooth module allowing any user of an Android phone with the Arduino Bluetooth Controller application to operate the raft promoting the raft's accessibility and ease of use. By studying the various conditions of floating waste objects, a roller system complemented by alternating sets of prongs was deemed as the most efficient and extensive method of intake. To improve efficiency and speed, frictional drag was minimized by having the intake mechanism elevate the collected waste into a storage area which ensures that there is minimal contact with the water. The RCRaftCleaner can assist with the broader clean-up effort of the world's waterways by performing comprehensive precise removal of floating plastic debris on a local and residential scale. It is envisioned that in coordination with other emerging solutions, the RCRaftCleaner will be a key tool in combatting global water pollution to the benefit of all.

Awards Won:
China Association for Science and Technology (CAST): Award of $1,200