Course: EECE 461

Department: Electrical & Computer Engineering

**Smart Trash Unit (STU)**

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So far, recycling has been a topic of paramount importance as it greatly helps the environment by segregating garbage according to the materials, allowing them to be reused or disposed of in a safer manner. Actions have been undertaken such as raising awareness on the importance of recycling and placing trash units for glass, paper, and plastic. These recycling garbage disposal units are seen spread around but are still used much less than the general garbage bin, mainly due to indolence.

The Smart Trash Unit (STU) is a two-stage garbage bin that will, thanks to smart recognition and implemented sensory functions, automatically discern the type of trash thrown in it. When items are disposed in it, the first stage, with aid of sensors and specifically developed software which accounts for the difference in physical properties such as light permittivity, infrared radiation, etc identifies the type of the waste. The next stage appropriately places the material in the respective chamber assigned to that type of waste. Additionally, sensor circuits continuously attempt to measure the level of fullness of the waste bags, and only indicate that the waste chambers should be emptied when the amount of waste in them is maximal, so as to save on plastic bags.

STU will thus have a landscape benefit by abolishing the necessity of having several trash cans for recycling aligned next to each other and also will make recycling a passive act that requires no additional effort; one simply throws their garbage as they would in a regular trash can, and STU takes care of the rest.