## EECE 461 Project Proposal

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**Problem Statement:**

The average household wastes far more plastic trash bags than what is actually needed. The problem lies in the fact that despite *appearing* full, the contents of many trash bags can still be compressed in order to contain much more waste. Discarding plastic trash bags before they have been properly filled represents a waste of plastic that can be reduced through implementation of a sensor system. In addition, the global trend towards recycling is sometimes hindered by peoples’ failure to properly sort their waste materials. If an appropriate sensor system were available to distinguish between the different types of garbage, then one could design an actuation system to automatically sort garbage. Particularly in Lebanon, where addressing the waste issue is a crucial issue, people still do not have the intent to take on waste separation practices which would greatly facilitate the waste collection, disposal and recycling systems in Lebanon.   
 In order to address these issues, it is our aim to design a waste disposal system that can discriminate between glass, plastic, paper, metal, and non-recyclable waste, and present the user with an *actual* fullness measure of the garbage bin with respect to its absolute capacity.

**Sensors:**

Tentatively, we plan to make use of the following sensors:

* Capacitive Proximity Sensor.
* Microphone or Piezoelectric transducer.
* Pressure/Force sensors.
* Photoelectric sensors.
* We will develop a method to distinguish between plastic and paper.

**Basic Concept:**

This will be a two stage garbage disposal unit. The first stage is responsible for detecting the *type* of material, and sorting it appropriately. The second stage is simply the storage, and is split into the aforementioned categories of garbage where in each division we determine whether it is really full or can fit more if its contents are compressed.

**References:**  
 1) <http://www.dailystar.com.lb/News/Lebanon-News/2010/Jul-14/58211-recycling-campaign-aims-for-greener-lebanon.ashx>   
 2) <http://www.statisticbrain.com/plastic-bag-statistics/>