**Product Name:** ReprintBot

**Goal:** To design and prototype a standalone system that recycles used plastic bottles in order to use the material for 3D printing purposes. The system will have individual components like a shredder for cutting the plastic bottles, a filament extruder and a feed mechanism for the shredded material to be transported to the hopper of the extruder, filament collection and retrieval system and finally a 3D printing system.

**Methods and technologies**
Concept model designing, electrical circuits, DC and stepper motor control, design of mechanisms, Arduino/ raspberry pi microcontrollers, sensors, calibration, heat transfer systems, polymer thermal property characterization.

**Research/Design Issues**
Single standalone system. Integrating the three main components for speed, accuracy and least amount of lead time. Delivery of product with cost and energy effectiveness. Adaptability in handling wide range of recyclable plastic products. Flexibility in extruding multiple polymers materials and printing with them. Controlling multiple motors in sync and interfacing sensors for minimum human input and better operation.

**Meeting time:**

**Advisors:** Dr. Nikhil Gupta

**Partners and sponsors:**

**Majors, preparations and interests:**
- **Mechanical Engineering** – Background/interest in design of mechanisms, concept building and fabrication, CAD modelling, heat transfer, polymer thermal properties.
- **Mechatronics/Electrical Engineering** – Background/interest in microcontrollers (Arduino, raspberry pi), sensor interfacing and feedback, DC and stepper motor control.
- **Coding** – Background/interest in coding, writing and interpreting algorithms (mathematical, logical etc).

**Contact**
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