ARONOWITZ - Senior Project Award

Artist Contact Information

Full Name Lauren Pettey

Major Industrial Design

Proposal

Project Title SmartCycle: Solutions in Plastic Sorting

Proposal

As a designer, I have consistently focused my work on sustainability, and am passionate about improving people's lives and reducing our impact on the Earth.

For my senior project, I will be focusing on improving recycling systems to be more efficient, productive, and cost-effective. The inspiration for this project began with a project I completed last semester; in which I conducted research and evaluated recycling rates in the U.S. and discovered a wide range of issues impacting our current systems.

My initial research led me to a large opportunity space to design around and I will be continuing with the project in an effort to find an applicable solution. I found that a majority of people care about and want to help environmental causes, but difficulties arise surrounding user knowledge. I aim to take a user-based approach to this project and find ways to make improvements upon how we recycle without requiring extra effort in one's daily life.

Overall, I focused on contamination in the recycling stream, and examined both the technologies used in recycling facilities, as well as the psychology of users surrounding sustainability. Through this project I aim to utilize these existing technologies, specifically near infrared spectroscopy, and design methods to bring them to a consumer scale and empower users to recycle in a more efficient and knowledgeable way, thus reducing the strain on recycling plants. I will be focusing on plastic sorting as a way to accomplish this as it is currently a large issue in recycling.

Impact

This award would allow me to experiment with and understand the technology that I'm designing around, as well as create prototypes that would allow for user testing.

As mentioned briefly in my proposal, I researched methods of plastic sorting that are used in recycling facilities and was particularly drawn to near infrared spectroscopy, which is used to detect desired polymers based on their unique wavelength signatures. I became determined to figure out if this is possible on a smaller scale, and it turns out it is.

I found a few companies with small sensors available, and reached out to the one that seemed the most promising: Spectral Engines. This company in particular is doing a lot of work in innovating material sensing, and already has a small, hand-sized sensor that could likely be applied in a plastic sorting scenario.

I first heard back from Matti Tossavainen from Spectral Engines, who offered some advice on the feasibility of the project and suggestions around using their technology. Next I contacted Claude Robotham from their sales team to get recommendations and quotes on items that may be useful to my project.

We landed on the conclusion that their Nirone Sensor Evaluation Kit would be helpful as it includes not only the sensor, but also a USB communication board, needed adaptors and cables, and their own software so that the sensor can be easily controlled with a PC.

As of now, this kit is well out of my budget ($2,300) but my conversations have provided valuable insight as to what I will need to get started. This award will either be put toward the kit mentioned, or used to piece together necessary parts myself as there are other scanners on the market for less (starting at a few hundred dollars). I feel that this is a necessary part of my process as I would love to be able to develop, understand, and user test my concept.

Artwork

Artwork 1

Artwork 3

Title Bioplastic Project Intro

Date March 2020

Medium Research, InDesign

Artwork 2

Title Bioplastic Material Research

Date March 2020

Meduim Research, InDesign

Title Family of Objects: Air Filter

Date Feb. 2020

Medium SolidWorks, KeyShot

Artwork 4

Title Air Filter Context Render

Date Feb. 2020

Medium KeyShot

Artwork 5

Title Tote Bag Concept Render

Date Oct. 2019

Medium Sketchbook Pro, Photoshop

Artwork 6

Title Tote Bag Prototype

Date Oct. 2019

Medium Canvas, Leather, Wooden Details

Title Bioplastic Project Intro

Date March 2020

Medium Research, InDesign