

Team Copy-Waste
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Team / Instructor Scrum - 5
Feb.1 2022 - Feb.8, 2022

Team Member (Re)introductions

- Nolan - Machine Learning Lead
- Will - Back-End Services Lead
- Rishabh - Front-End Services Lead

Vision

Our project has two objectives; reduce risks to the public, waste management employees and facilities and reduce the cost to municipalities and waste management companies caused by rare and severe contaminants in recycling waste collection.

Mission

We strive to achieve our vision by automating the detection of severe and rare contaminants in the recycling stream

Business Need

Our business need, to reiterate, is to reduce risk and cost to municipalities and waste management employees. As recycling rates increase, contamination and risk becomes a growing concern.

Current Status: Green

Project Issues

- No issues within this sprint

Project changes

- Our Mitacs proposal went through a peer review process and responding to feedback, we made some revisions and our Mitacs proposal was approved

Addressing Comments

- With regards to comments previously made by Dr. Gelowitz about IP, we have also signed contracts for employment with Prairie Robotics

Individual Contributions (Feb 01 - Feb 08):

Rishabh:

- Refactoring Copy-Paste code
- Simplifying and Randomizing Object Transformation

Nolan:

- Pair programming with team members
- Added features to convert binary mask arrays back to segmentation polygons.

Will:

- Worked towards running copy-paste on the audited dataset
- Worked on exporting pasted images from the Copy Paste algorithm with combined annotations files

Bin Tip Detector Overview

Our Universal Bin Detector was deployed to Waste Collection Vehicles and we continue to monitor the performance. The detector is operating within expected parameters and successfully generating waste collection events.

Evaluation is ongoing and this week we will be conducting additional tests for black waste bins.

Simple Copy-Paste Overview

Our data augmentation MVP is now at the stage of placing objects with an increased variety of transformations while iterating through background images. This allows the object to be placed in a random assortment of places, sizes, and rotations. In these images the pizza box is copied, transformed and pasted on three different backgrounds consequently.

As we mentioned in the previous meeting, we are attempting to use yard waste as our first category of rare contaminants and have found several instances of it occurring in residential recycling. These yard waste examples are now ready to be used as our pasted contaminants.

Next up

Team

- Work towards Layering Transformation for MVP 4
- Continue to monitor bin detector
- Start working towards scaling up our augmentation prototype for MVP 5
- Also assigning time to further audit our image dataset

Rishabh

- Exporting Annotations and Image metadata as well as assist in layering background objects

Nolan

- Working on Layering Augmentations and creating metrics for Black waste bin performance.

Will

- Multi object placement
- Scaling up our prototype

Team Reflection

- **Does the team feel "on track"? (reiterate the above colour status)**
 - We believe we are still on track
- **What progress does the team particularly feel good (great) about?**
 - We feel really great about our Mitacs Proposal being approved. It was a tedious process but a rewarding one!
 - We've completed a few MVPs for our Copy-Paste Pipeline, this has been extremely encouraging and we are excited about the next stages of our project.
- **What barriers (if any) does the team feel is a current impediment to success?**
 - This week we need to audit 30,000 images each, to ensure our dataset is clean.
- **What help (if any) does the team require to move positively forward?**
 - Moving forward we need to keep having regular meetings with our industry partner to guide us.
- **What questions or concerns does the team have (if any)?**
 - No concerns at this time