

# Team Copy Waste

## Scrum 4

Oct. 22, 2021 - Nov. 18, 2021

 IN PARTNERSHIP WITH  
PRAIRIE ROBOTICS



# THE TEAM



**Nolan Flegel**  
Machine Learning



**Rishabh Prasad**  
Front-End Services



**William Peers**  
Back-End Services

# PROJECT VISION

REDUCE RISK FOR  
WASTE MANAGEMENT  
WORKERS & COST FOR  
MUNICIPALITIES



# OBJECTIVE

CREATE AN OBJECT  
DETECTION MODEL FOR  
RARE AND SEVERE  
CONTAMINATION IN  
HOUSEHOLD RECYCLING



**STATUS**  
GREEN

# Project Issues / Changes

- Yolo Format
- Green Screen Integrations



# Mitacs Report Submitted!



# Individual Contributions & Next Up





# Overview

## GREEN SCREEN

[LOGOUT](#)

### CITY PERFORMANCE

Contamination Rate: 23%

Common Contaminant: Plastic Bag

**312**

OFFENDERS

**222**

CONTAMINANTS

### RECENT COLLECTION

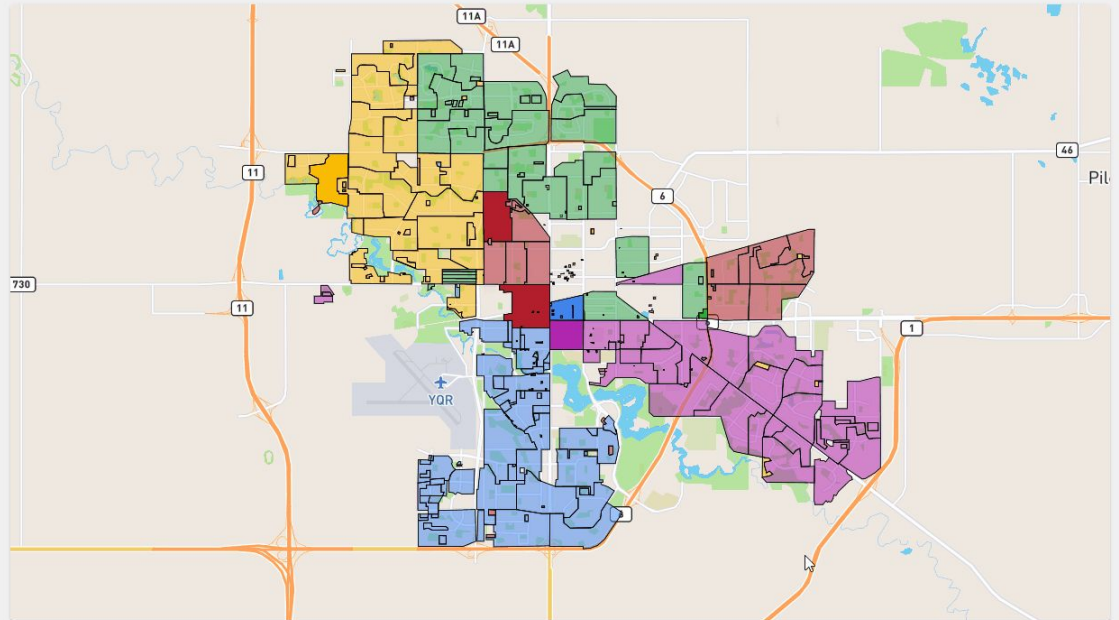
Collection Dates: Oct 25 / 2021 - Oct 31 / 2021

Collection Zones: South East and East

Hazardous Waste: 5

Households Collected: 221

Total Contaminants: 123

















# SuperAnnotate

Navigation: Data | Classes | Analytics | Contributors | Settings | Download | Workflow

← cw-universal-bin-tip > uncategorized\_multiclass Upload

Search by name...

<input type="checkbox"/>	Name	Status	Assignee
<input type="checkbox"/>	 04-08-2021_20_001.png	✓	-
<input type="checkbox"/>	 04-08-2021_20_002.png	✓	-
<input type="checkbox"/>	 04-08-2021_20_003.png	✓	-
<input type="checkbox"/>	 04-08-2021_20_004.png	✓	-
<input type="checkbox"/>	 04-08-2021_200_003.png	✓	-
<input type="checkbox"/>	 04-08-2021_200_004.png	✓	-
<input type="checkbox"/>	 04-08-2021_323_001.png	✓	-
<input type="checkbox"/>	 04-08-2021_323_002.png	✓	-
<input type="checkbox"/>	 04-08-2021_381_001.png	✓	-
<input type="checkbox"/>	 04-08-2021_381_002.png	✓	-
<input type="checkbox"/>	 04-08-2021_381_003.png	✓	-
<input type="checkbox"/>	 04-08-2021_381_004.png	✓	-
<input type="checkbox"/>	 04-08-2021_693_003.png	✓	-
<input type="checkbox"/>	 04-08-2021_693_004.png	✓	-

SuperAnnotate - Vector

vector.superannotate.com/5146/68846/189781

Brightness: 0% | Fill: 25% | Contrast: 0% | 01:05

Complete

Tools: [Selection Tools] [Eraser] [Lasso] [Freehand] [Polygon] [Line] [Rectangle] [Circle] [Erase] [Copy] [Paste] [Undo] [Redo] [Zoom In] [Zoom Out] [Reset] [Fullscreen] [Help]

QA: ☐

Annotations:

- BLUE\_BIN (1 box)
- BUILDING (2 boxes)

Image: A photograph of a blue bin next to a building, with green bounding boxes indicating the detected objects.

# SuperAnnotate



# SuperAnnotate



# Overview

**WEEK #**      1-2    3-4    5-6    7-8    9-10    11-12    13-14    15-16    17-18    19-20    21-22    23-24    25-26

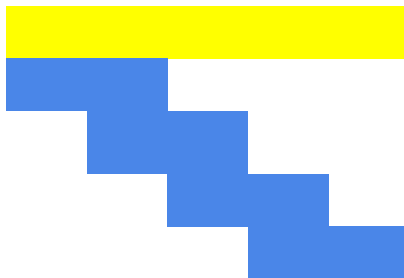
## Phase 1: Bin-tip

Research real-time detection algorithms

Collect false-positive images

Annotate images

Train detection models



## Phase 2: Copy-Paste Augmentation

Collect various images of HHW items

Develop Copy/Paste Augmentation pipeline

Create test dataset

Train model

Evaluate results





The screenshot shows a Trello board for a project named 'Capstone - Copy-Waste'. The board is organized into columns representing different stages of the project workflow. The background image is a close-up of a blue surface with a large, white, stylized recycling symbol (a triangle of arrows) in the center.

- Backlog:** Documentation - empathy map, CI / CD Pipeline for bin tip detector, CI / CD Pipeline for green screen, BinTip - Access test bench, BinTip - TPU setup/test, Cloud training ML models - Digital Ocean/Google colabs.
- Blocked:** + Add a card
- Next Sprint:** Working with / Implementing new API endpoints, Get bin simulation working, Dashboard - Project Commercial, Write 411 Report (Dec 3), + Add a card
- Current Sprint:** Develop BinTip training models (0/3), Test BinTip, Computations / Logic for the Dashboard, + Add a card
- Doing:** 411 - Documentation/MVP/milestones (1), + Add a card
- Under Review:** Mitacs Proposal (3), binTip - Create script to convert SA to YoloV5, + Add a card
- Done:** + Add a card
- Previous Sprint:** S3 - copy categorized images to new folder, Simplify BinTip Categories (1), Annotate bin images (1), Mitacs - Update CVs, Meeting w/ El-Darieb & George (1), Implement Map and Zones to Dashboard, Make Zones Interactive, Initial Templates for Project Documentation (5.9%), + Add a card
- Archive:** Get Tim Access to the StreamSight repo in PR, Talk to Sam about Superannotate (1), BinTip - S3 Bucket, Find and Sort False Positives (2), Download streetview images, Create Dashboard Panels, Setup Front-end Architecture of the UI, URStreamSight Monolith Setup, Meet with Matt - Bin Tip Detector (1), Update Gantt Chart (0/3), new weekly sprint with Sam, Schedule meeting with El-Darieb/George (1), Database Access, Mitacs - review all changes and finalize, Mitacs - Update/Finalize References, Mitacs - Migrate from google doc to official mitacs doc, + Add a card

# Reflection

- Does the team feel "on track"?
  - We believe we are still on track.
- What progress does the team particularly feel good (great) about?
  - We made great progress in the last 2-3 weeks
  - Mitacs proposal submitted
  - Overcoming obstacles as a team

# Reflection

- What barriers (if any) does the team feel are a current impediment to success?
  - Unexpected integration issues with PR API
  - Annotation format compatibility issues
- What help (if any) does the team require to move positively forward?
  - Coordinate with PR to test bin detector
  - Develop a plan of actions for the development of the Copy-Paste pipeline



# Reflection

- What questions or concerns does the team have (if any)?
  - Falling slightly behind our Gantt Timeline