TOC

Understanding the problems

01   Many people still have difficulties understanding the types of trash and the ways they are recycled or disposed.

02   Few people who understand the ways trash should be recycled or disposed, don't see the impacts of their little decisions on the environment so, they are less motivated to spend couple more minutes in organizing their trash.

The negative effects of improper waste management is real and needs immediate action!

Solutions

ℯ Nviro is here to

- **Help** users categorize garbage and further help them to appropriately dispose them
- **Help** connect users with the reality that their every action has a significant effect on environment
- **Gamify** the whole idea of recycling in order to give the users instant satisfaction of their good action.

Features of 🌱enviro

- Classifying the user's image and provide which category the trash is in for a recycling purpose

- Providing information of a quick fact check about the recycling category as well as educate how to recycle it

- Measuring the user's impact on the environment

Different Categories for trash classification

1. Cans
2. Cartons
3. Cigarettes
4. Foils
5. Paper
6. Paper Cups
7. Plastic Bags
8. Plastic Bottles
9. Plastic Lids
10. Straws
11. Styrofoam

How Does enviro work?

User Interface

Users are able to take a picture of a piece of trash using camera functionality in our demo

Classify

Our app will classify the trash based on 14 categories.

04

01

02

03

SHARE

Based on that category, the user is taught how to recycle, repurpose or dispose of that trash

Measure Impact

The impact of the user's action s measured and quantified.

How was enviro built?

- Developed a computer vision algorithm using Google Cloud Platform's AutoML
- Ended up with a model that had around 95% accuracy in detecting and classifying trash across 11 different categories
- Web app was created using React and Redux
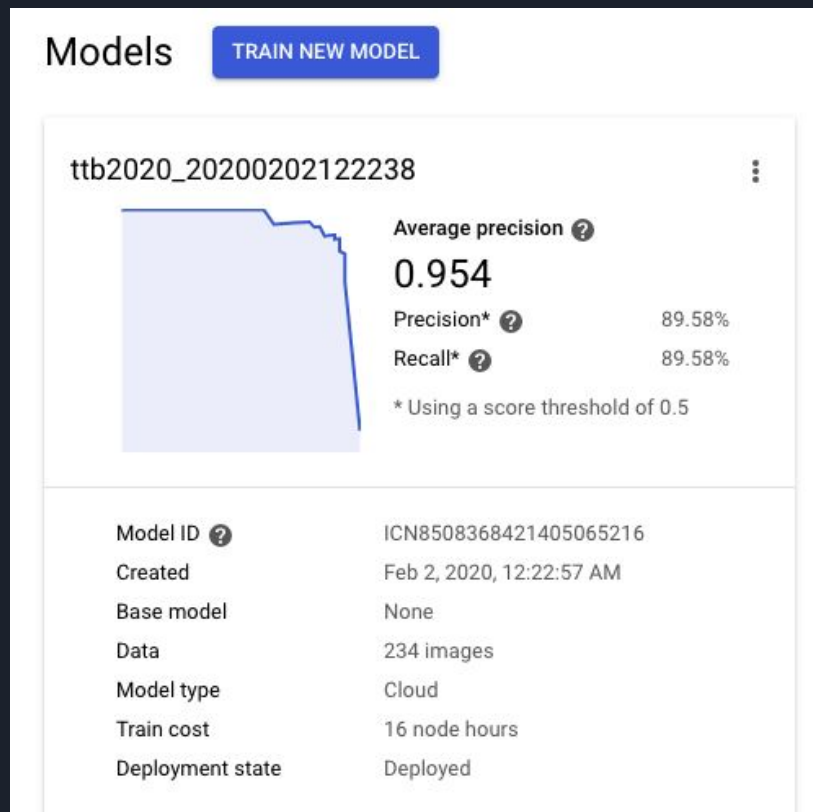
Challenges While Building enviro

- Difficulty in the refinement of idea which led us to have less time actually building enviro

- Unfamiliarity with Google Cloud Platform in the beginning

- Slight difficulty training the model against hundreds of images and deploying the model on cloud
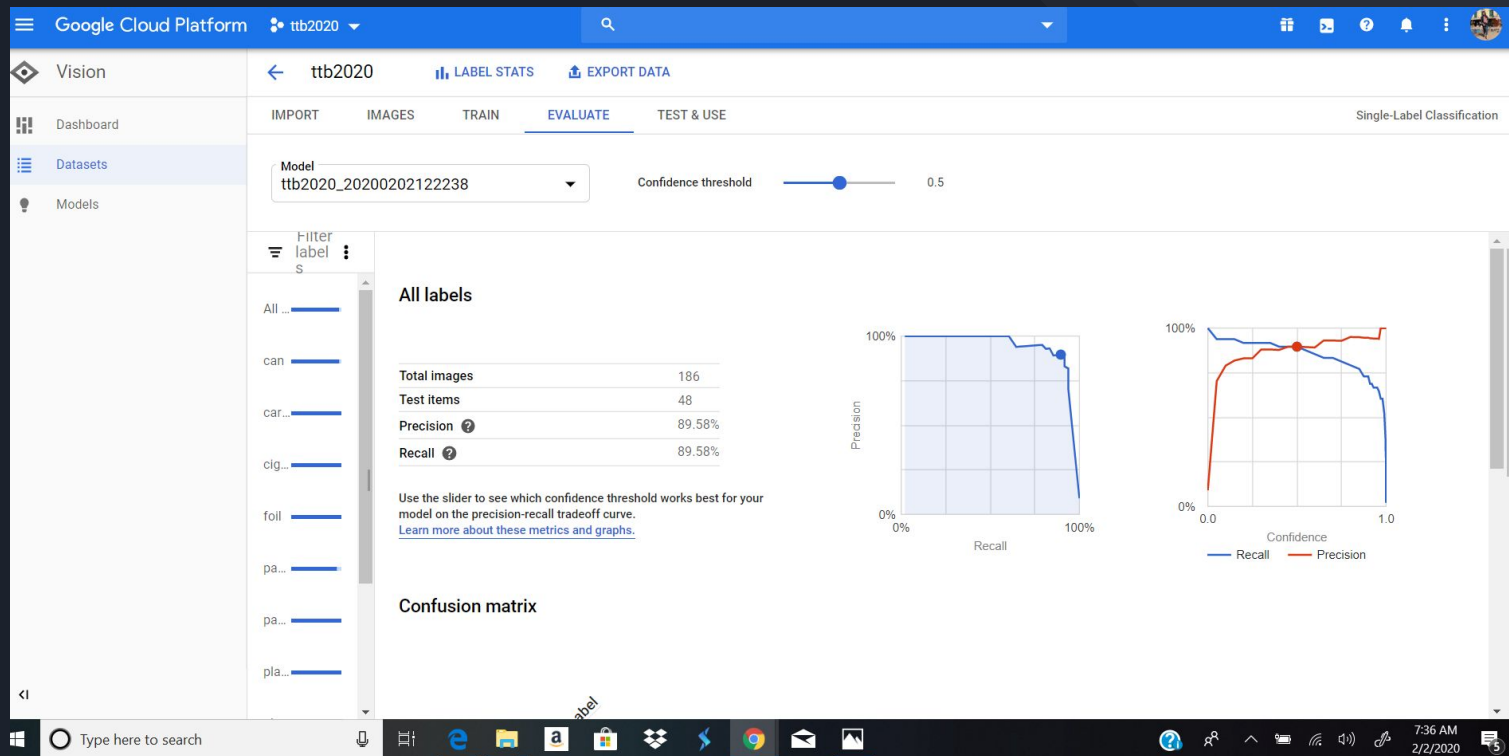
Evolution of enviro

- Add a game feature to enviro so that users can collectively manage trash with their friends and family while getting instant results of their actions
- Add real time location to every picture user takes so that trash can be easily located and concerned authorities be notified

Appendix 1 : Model Results

Models   **TRAIN NEW MODEL**

ttb2020_20200202122238

 ⋮

Average precision ❓

0.954

| Precision* ❓ | 89.58% |
| Recall* ❓ | 89.58% |

* Using a score threshold of 0.5

Model ID ❓	ICN8508368421405065216
Created	Feb 2, 2020, 12:22:57 AM
Base model	None
Data	234 images
Model type	Cloud
Train cost	16 node hours
Deployment state	Deployed

Appendix 2 : Model Results Cont'd

Appendix 3 : Model Results Cont'd