Satellite Image Classification Using Amazon SageMaker

Difficult to Extract Information from Satellite Images

Expensive
Takes long time to process

Complex
0.3 GB per 100 sq km.
Twin Cities: 70 GB
The World: 186 TB

➡ **Big Data Solution = Amazon SageMaker + Amazon S3**

Amazon SageMaker
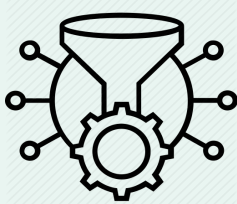
The first integrated development environment for ML
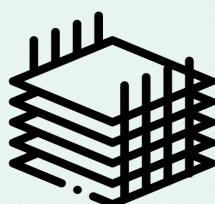
10X Increase in team productivity

90% Cost reduction with managed spot training
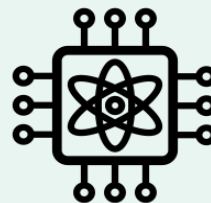
70% Reduction in data labeling costs

Prepare → Building → Train & Tune → Deploy & Manage

Scalability Easy and inexpensive to scale up or down

Durability 99.999999999% durability of objects
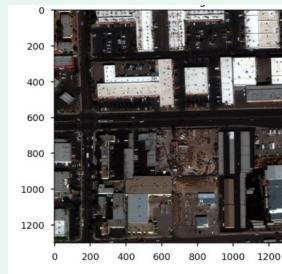
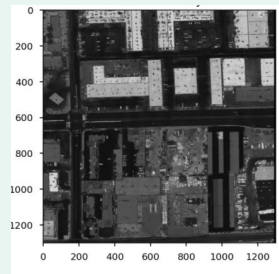**Latency** Significantly lower latency

Amazon S3

An object storage service that offers industry-leading scalability, data availability, security, and performance
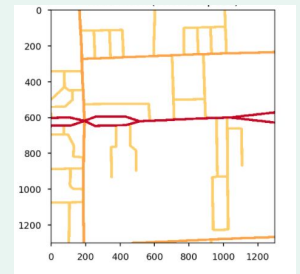
3 Different Types of Data
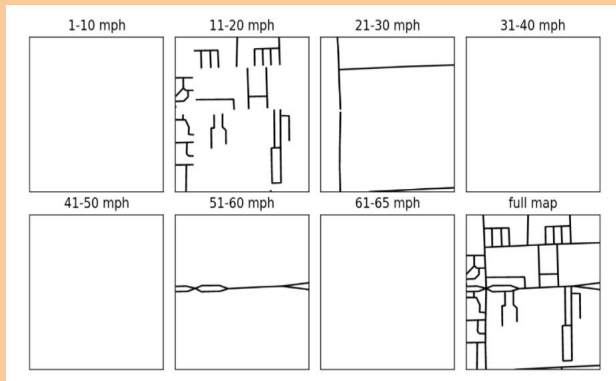
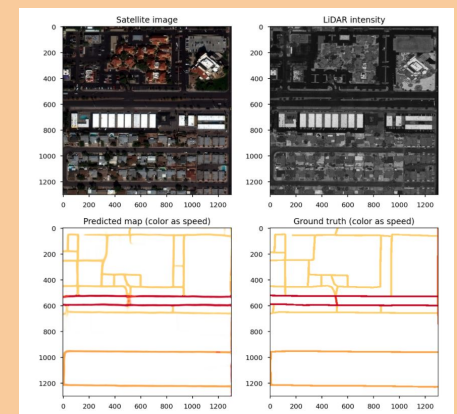60+ GB of satellite image data from around Las Vegas

Satellite Image

**LiDAR Intensity**

Road Mask

- Model predicts the maps in each speed category
- Training data is broken into 7 categories
- Predicted data is aggregated from 7 categories to 1 final map

- Train a ResNet-Unet Convolutional Neural Net model for $14.98/hour
- Employ a pre-trained model for $2.77/hour
- Model is able to isolate the roadways and speed limits

Information Extracted from satellite images is useful for navigation software
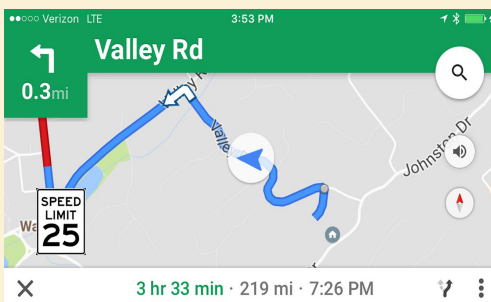
- Road map and speed limit information support better navigation service.
- Autonomous vehicles can use these information to navigate themselves

SELF DRIVING 18 WHEELERS

Contact Us

Team 4

Laura Catano   catano27@umn.edu
Mark Chen   chen6229@umn.edu
Callie Page   page0268@umn.edu
Weizhong Yao   yao00135@umn.edu

GitHub

YouTube

Use phone camera to scan QR code