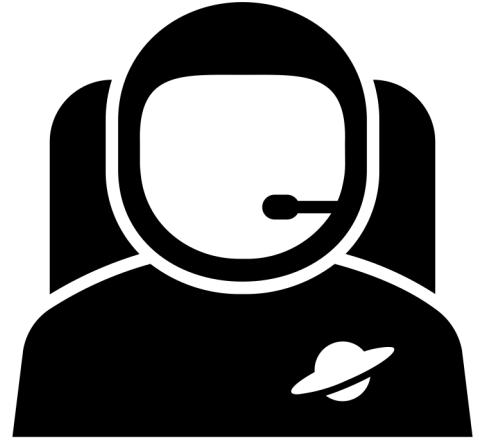


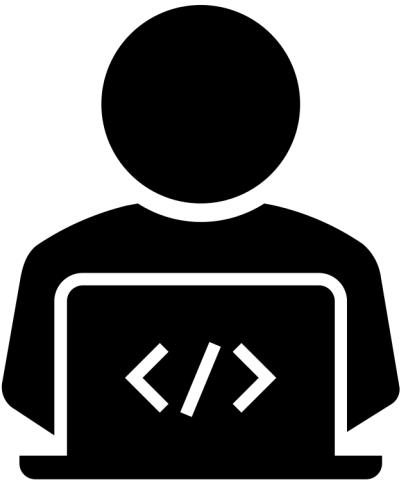


Flood Measurement from a Photo

By
Shaffer, Hoke, Pander & Kuehl Partners



Clint Hoke



Jamie Shaffer



Jonna Pander



Josh Kuehl

Partners

Agenda

- Problem Statement
- Research
- Solution
- Results
- Issues





Problem: Create
a machine model
that can detect
flood depth from
a photo.





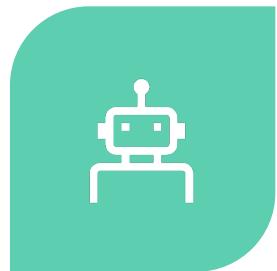
Research



SCHOLARLY
ARTICLES



RESOURCES

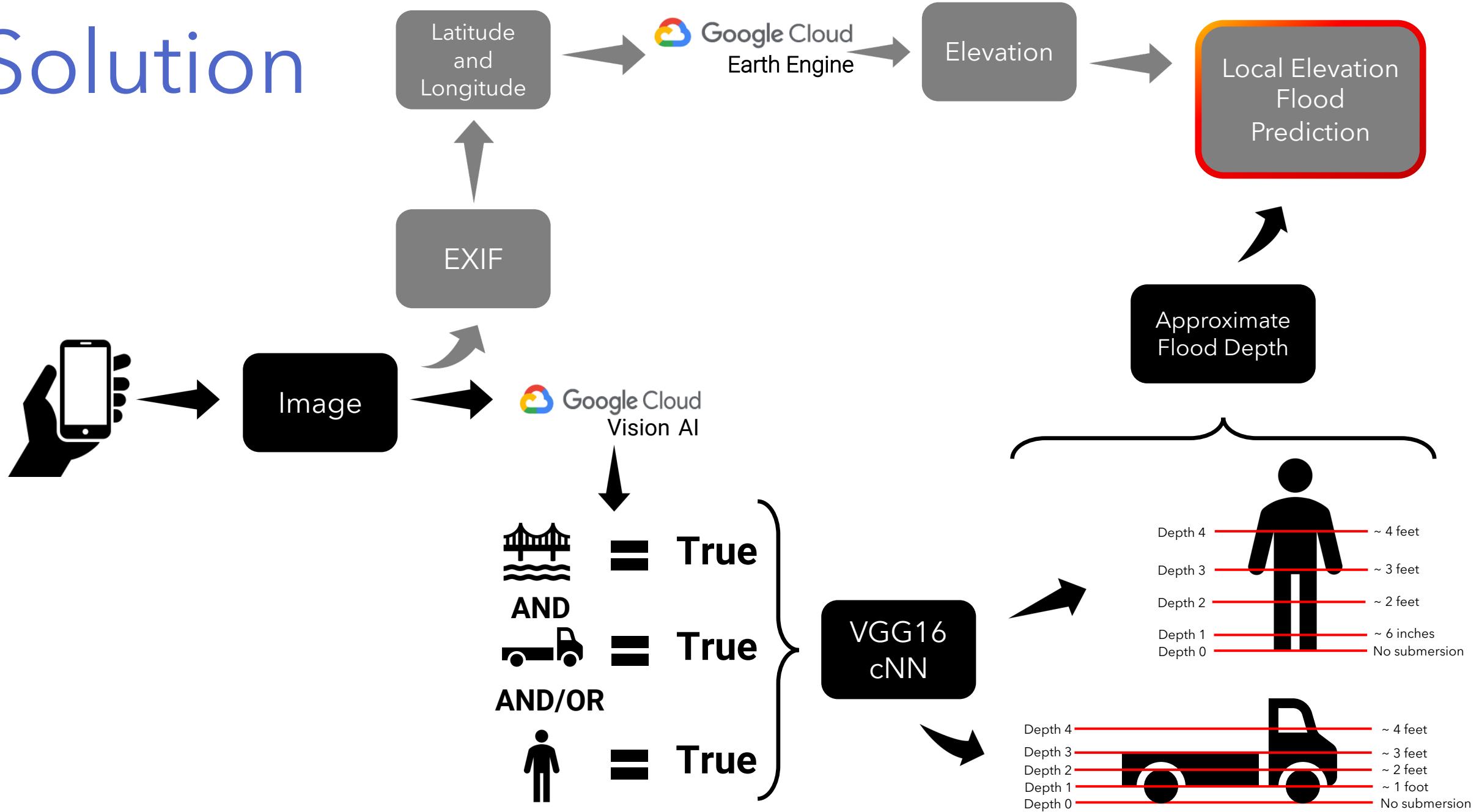


APIS



LIBRARIES

Solution



Google Vision AI

- Detect objects automatically
- Data labeling service
- Image pre-processor
- Built API to run batches of images
- Paid Service

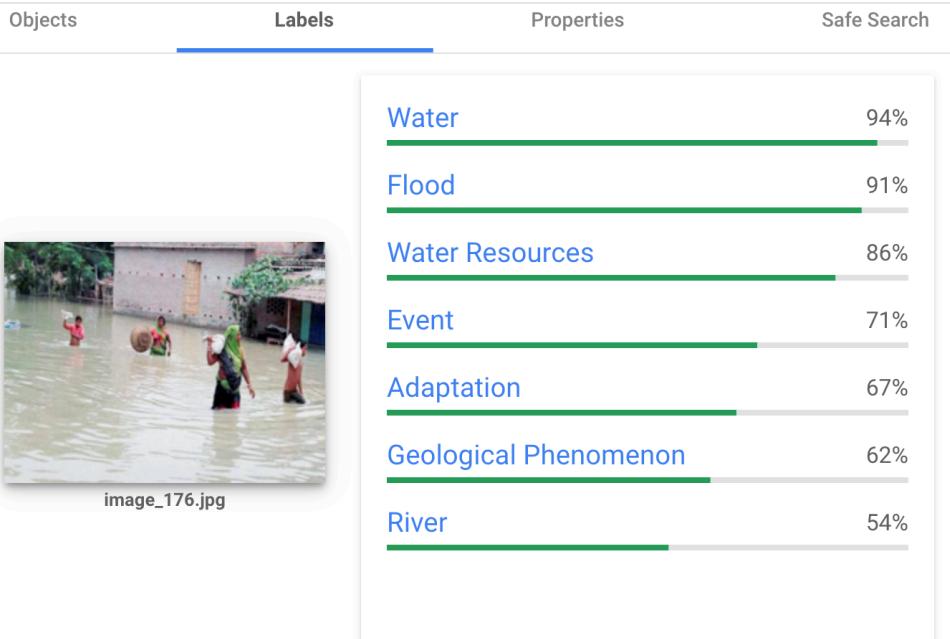
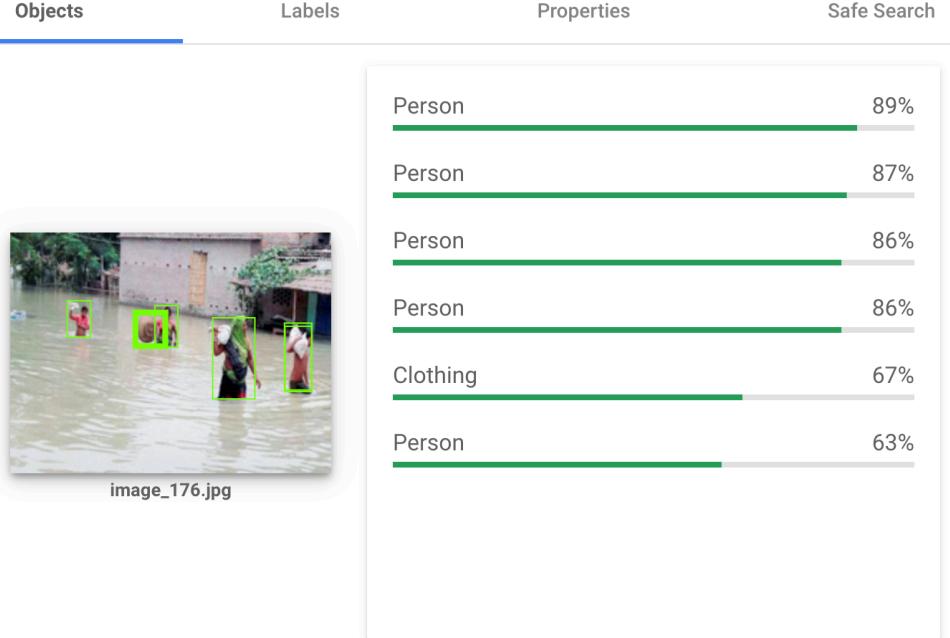
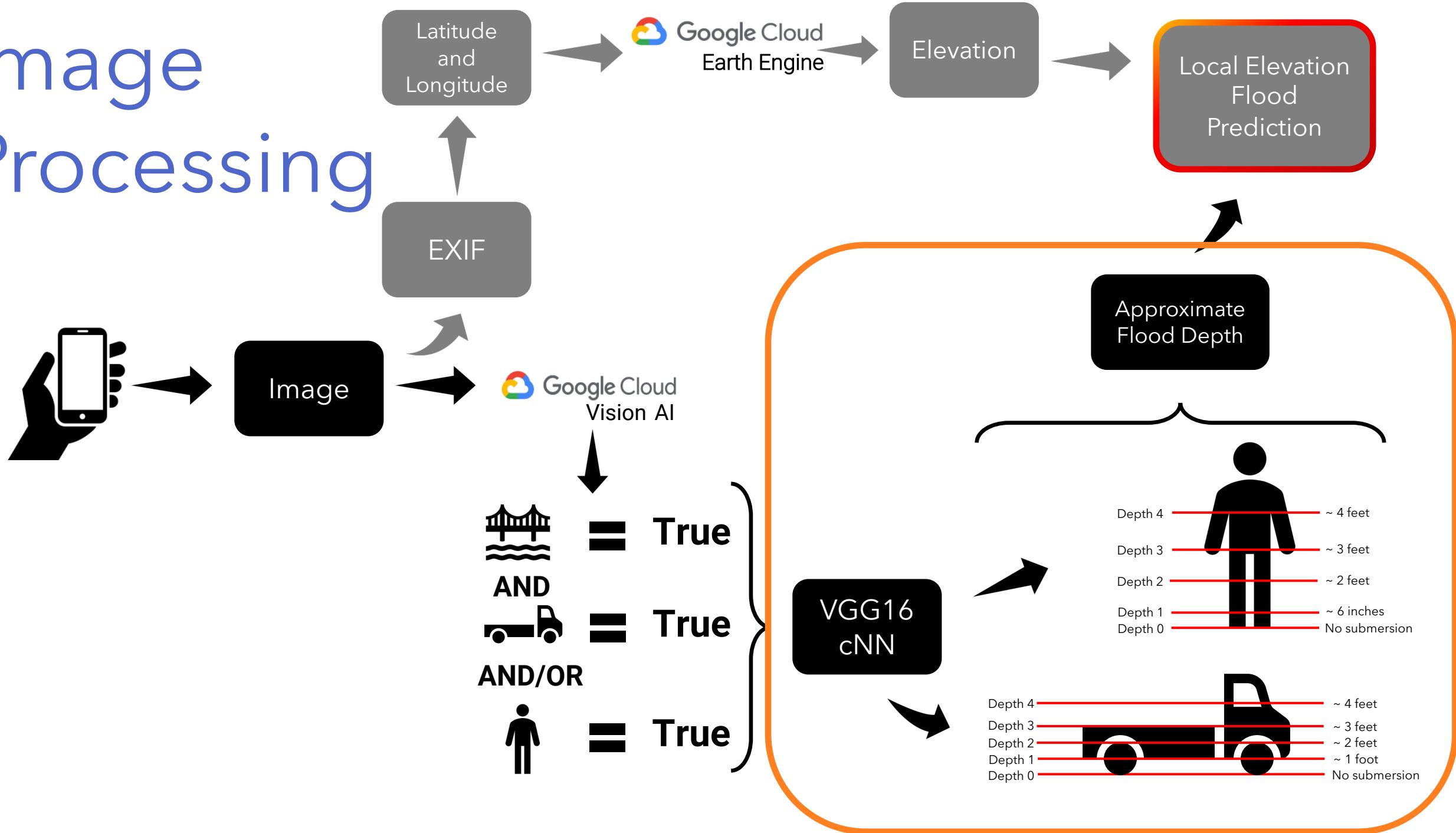
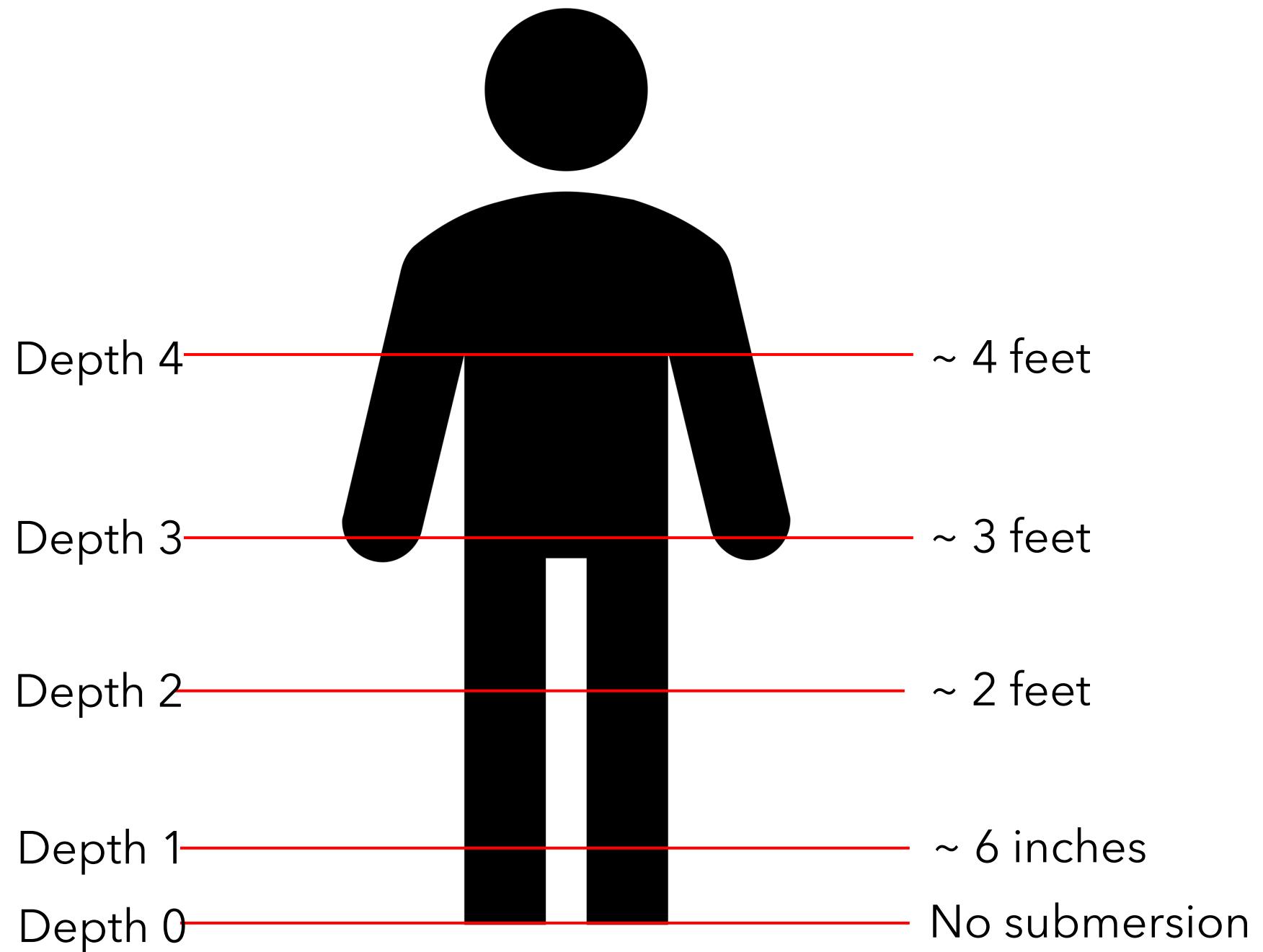


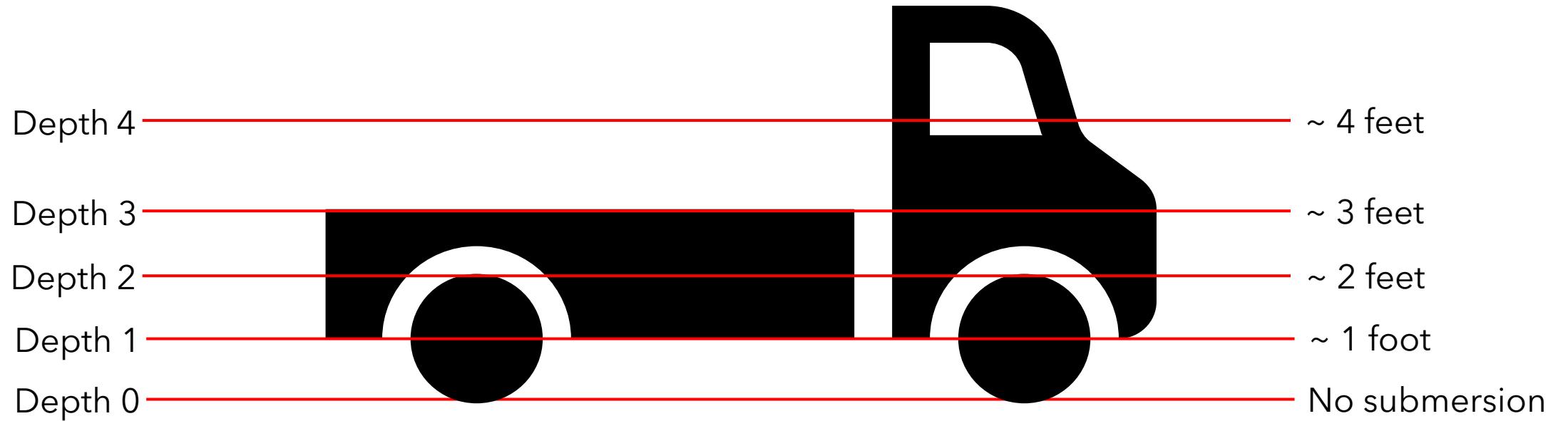
Image Processing



Person Depth



Truck Depth



Results

Truck Model

- Exact Accuracy: 32%
- Tolerance(+/-1) Accuracy: 80%
- Most accurate at depths 0 - 2

People Model

- Exact Accuracy: 25%
- Tolerance(+/-1) Accuracy: 60%
- Most accurate at depths 0 and 4

Image Augmentation and Challenges

Image: rot-4.5_img_0144.jpg

Actual: depth_3

Predicted: depth_2

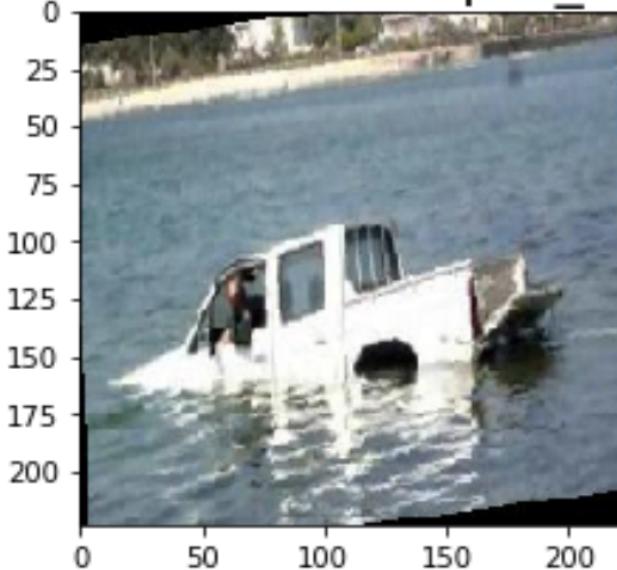
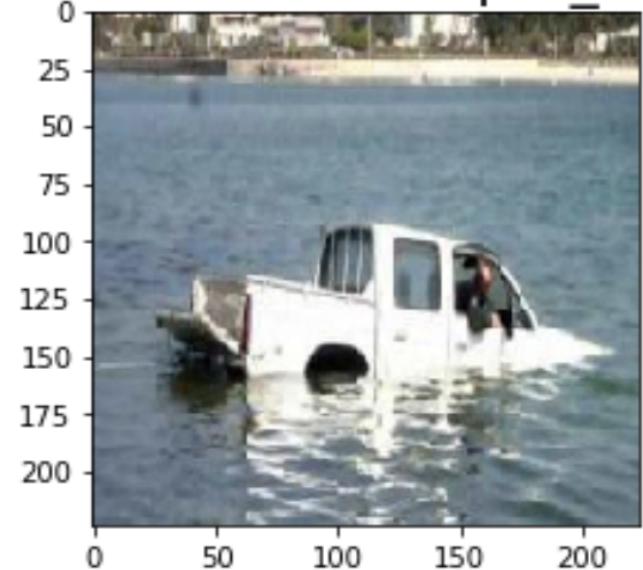


Image: hflip_img_0144.jpg

Actual: depth_3

Predicted: depth_2



Issues

1. People can swim
2. Shortage of training data
3. Bow wake
4. Personal computer processing power
5. Complex images
6. Micro terrain
7. Time constraint
8. Definition of levels
9. Flash Flooding vs Flooding

Questions

