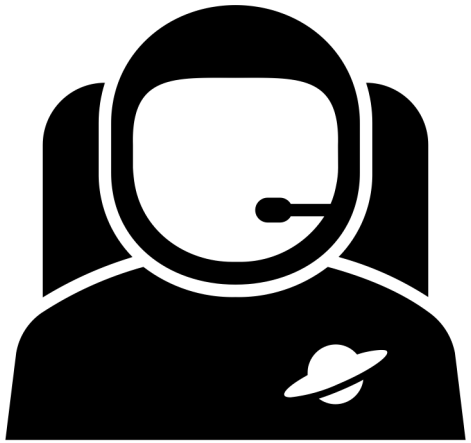
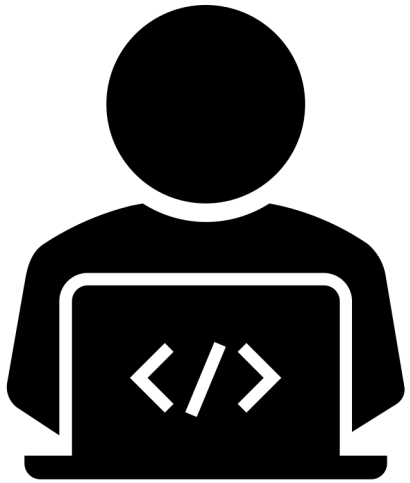
Flood Measurement from a Photo

By

Shaffer, Hoke, Pander & Kuehl Partners LLP



Clint Hoke



Jamie Shaffer

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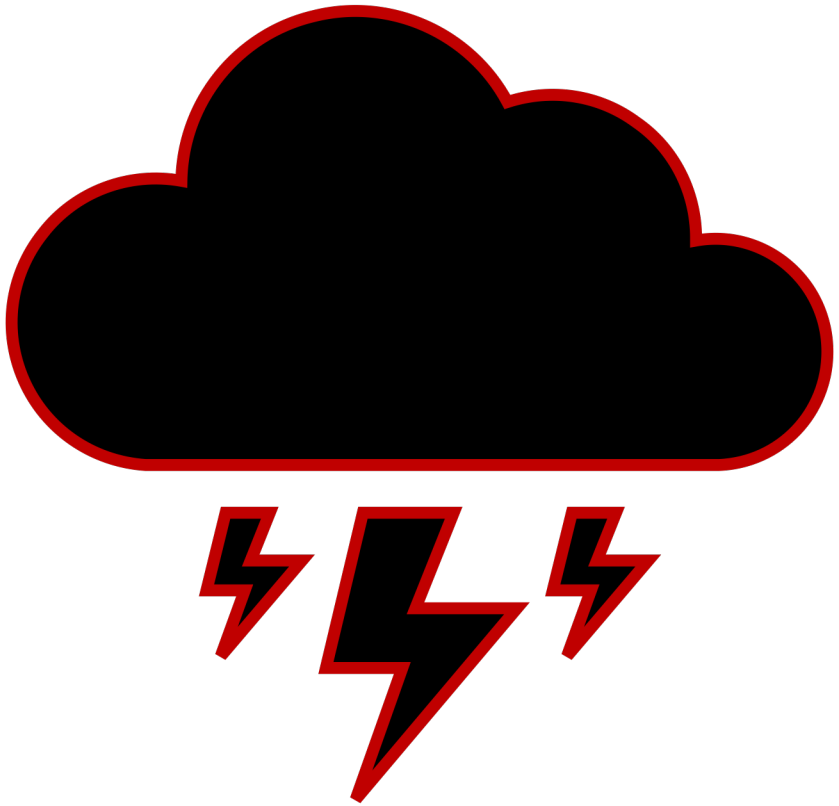
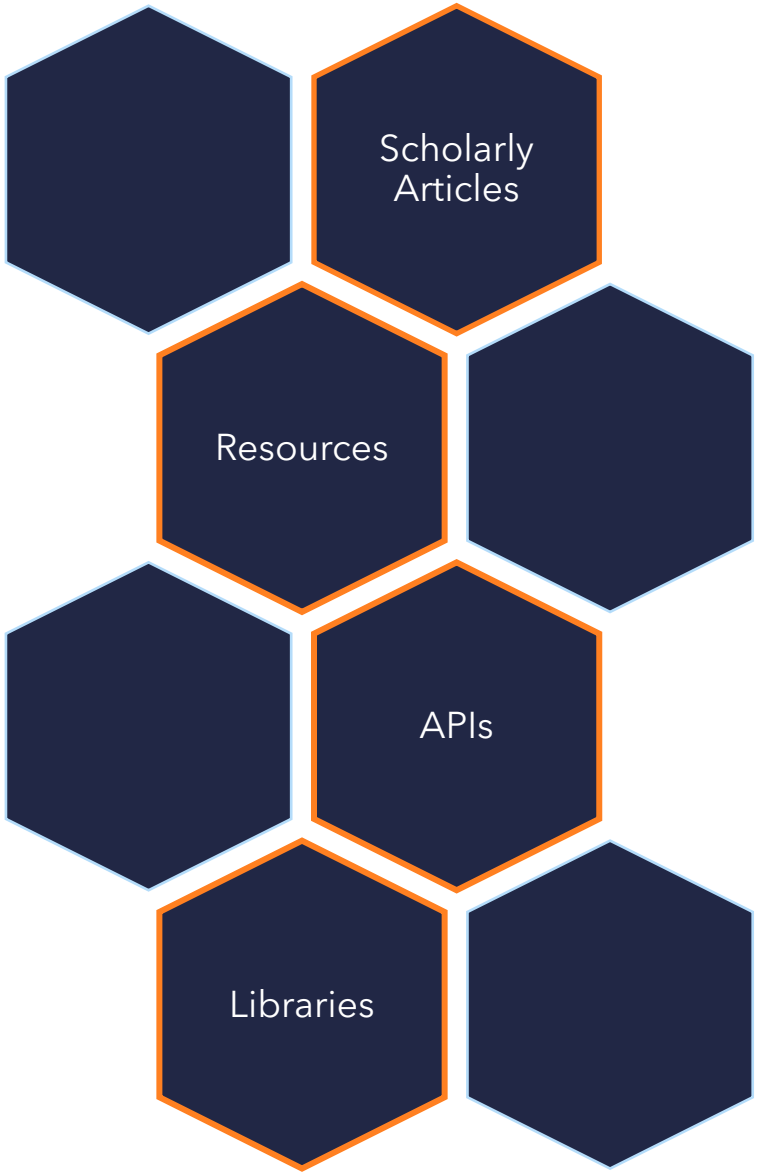
Partners

Agenda

- Problem Statement
- Research
- Solution
- Issues

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

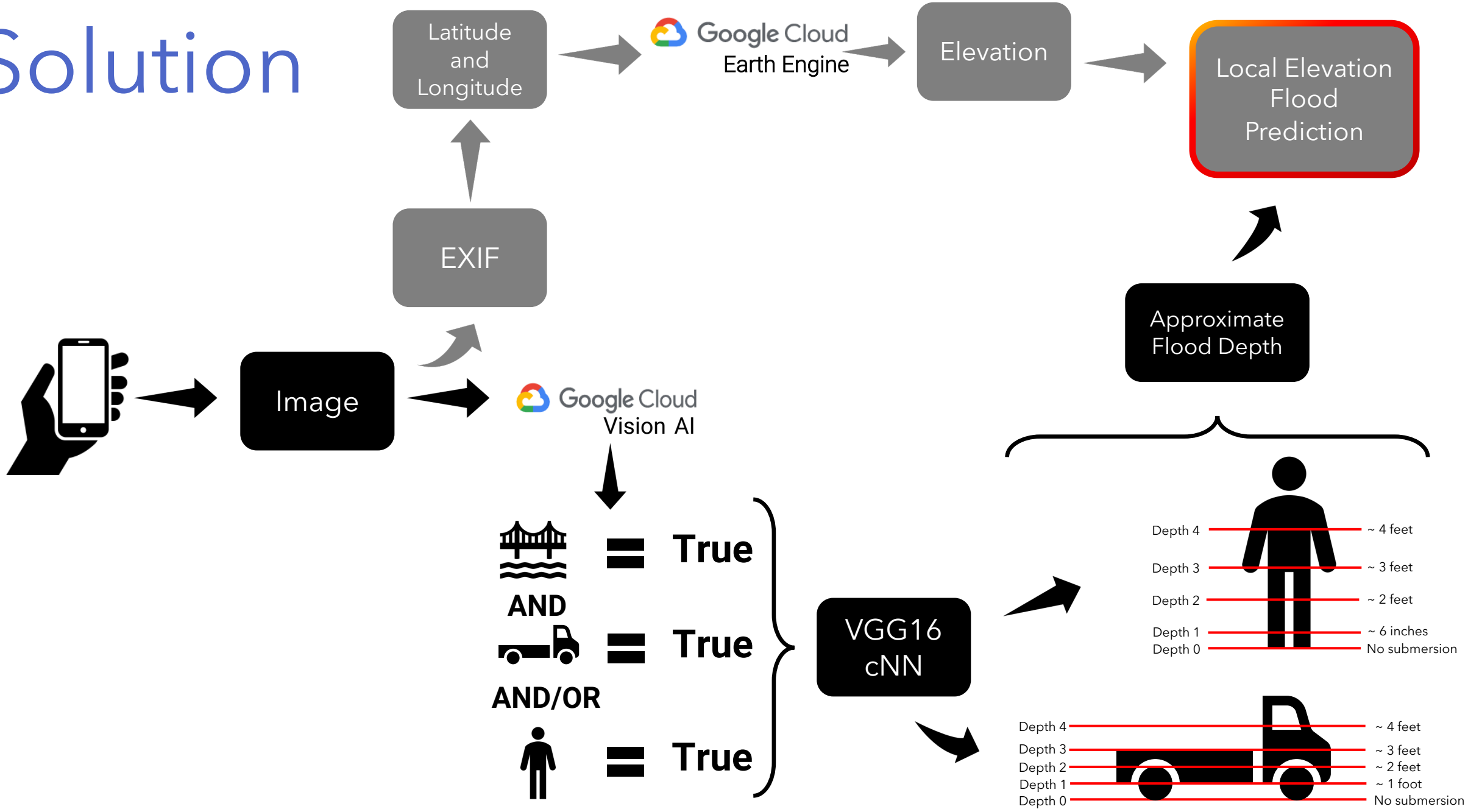




Research

*Full list of research available here

Solution


Latitude and Longitude
Google Cloud Earth Engine
Elevation
Local Elevation Flood Prediction
EXIF
Approximate Flood Depth
Image
Google Cloud Vision AI
True
AND
True
AND/OR
True
VGG16 cNN
Depth 4
~ 4 feet
Depth 3
~ 3 feet
Depth 2
~ 2 feet
Depth 1
~ 6 inches
Depth 0
No submersion
Depth 4
~ 4 feet
Depth 3
~ 3 feet
Depth 2
~ 2 feet
Depth 1
~ 1 foot
Depth 0
No submersion

Issues

- need more photos
- may need to remove complex photos to avoid training issues
- shifting images augments the list, but filling with neighbor pixel creates striping
- we didn't realize that the ImageDataGenerator would do the crop, so we cropped externally (sorry, Josh!!) and some images have black bars. Unclear if the model is training on this instead of the photo content

Questions