Classifying the Right-Of-Way for San Francisco

Using Semantic Segmantation on SkySat Ortho Imagery

MUSA 650 Progress Report

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For my final project, I will be performing right-of-way semantic segmentation of satellite imagery. I want to understand which areas of the City of San Francisco are roads/right-of-way. I already have a polygon dataset of those right-of-ways, but I still need to find a proper set of rgb satellite images before cleaning them and developing the U-net model.

**Project Steps:**

Find Data

1. ~~Create Github (~~[~~LINK~~](https://github.com/nelmsal/MUSA650_FinalProject_RightOfWayClassification)~~)~~
2. ~~Find Right-of-Way Polygons for San Francisco (~~[~~San Francisco Open GIS~~](https://data.sfgov.org/City-Infrastructure/Right-of-Way-Polygons/a2mg-gwmg)~~)~~
   * Created in 2016, Updated last in 2019
3. NAIP Digital Georectified Image (.5 x .5 meter pixel)
   * 2016, 2018, 2020
   * USDA-FSA-APFO Aerial Photography Field Office
   * 32-bit pixels, 4 band color(RGBIR) values 0 – 255
   * Multispectral RGB-Ir: Red, Green, Blue, & Infrared

Data Preparation

1. Create a mask from the Right-of-Way (RoW) Polygons based on the shape of the satellite images ([PrjA1\_DSTL\_ImgChannelsMasks.ipynb](https://drive.google.com/file/d/1IHh7sJBLO_jUJEbSxrhQGhYGGQK5umMz/view?usp=sharing) [Wk6])
2. Cut the RoW masks & satellite images into the same sized windows ([DLBasics\_SHIPS.ipynb Wk12 Cutting](https://github.com/MUSA-650/Spring2022-Week12/blob/main/DLBasics_SHIPS.ipynb))
3. Process the satellite images into matrices

Develop & Fit the Model

1. Start with a U-net architecture for the model. Then potentially look into alternatives
2. Fit the model
3. Analyze the accuracy then re-evaluate the model