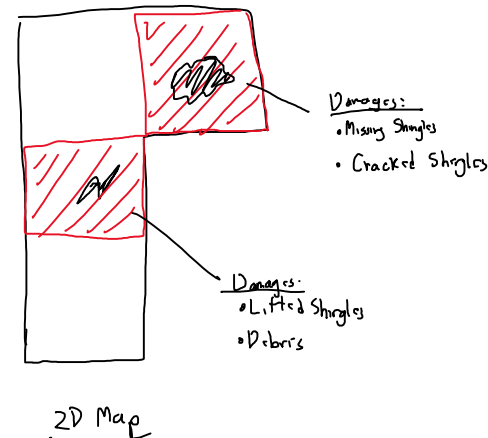
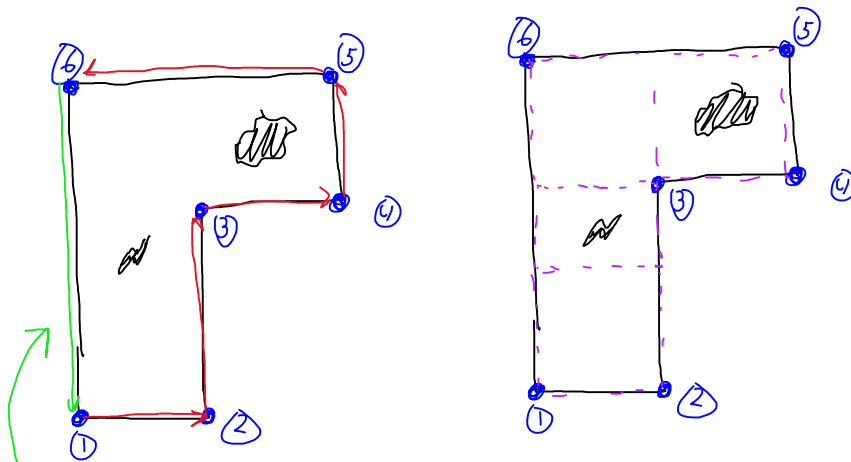
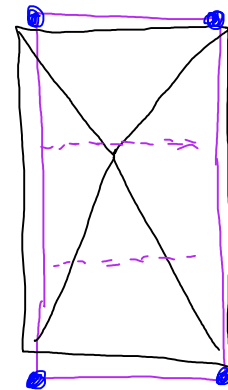
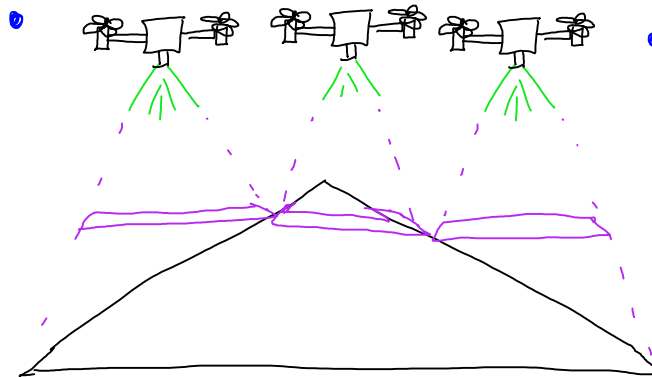
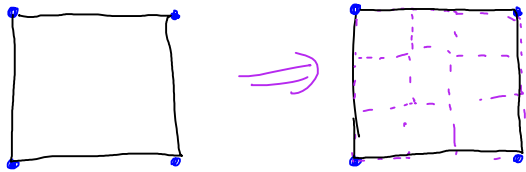


Flow Chart

November 4, 2024 10:10 PM

Tiled View



- Is top-down view of roof
- Will know locations of each image taken, helping to produce/output map of where the relative defect is located
- (Good for user knowledge) without having to know where the user is located

• Problem: How to locate these positions?

1. Use IMU's/localization to estimate positions:

- The markers (1), (2), ... will be tracked relative to the "starting position" (i.e. (1))
- The user will "place" markers at desired positions to indicate vertices in the roof (x, y, z) coordinates with distance relative to (1)
 - (could be placed via a button)
- Straight lines will be drawn connecting each marker in the order they were placed (the last marker will automatically connect a straight line directly to the very first marker)
- This will create an outline of the building
- The drone can then subdivide roof into "tiled" parts, acting as the boundaries of where regions could be classified as "damaged" vs "normal" on a map

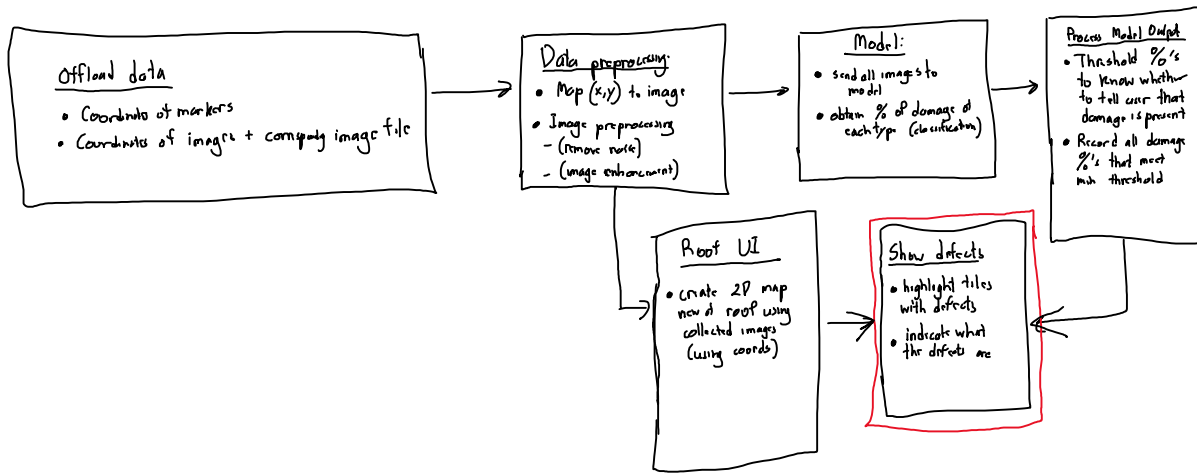
2. Physically place markers

- User will drop off markers (e.g. ArUco Marker (bar) Codes) along the edges/vertices of



- the roof, marking the borders of the roof
- These points will (similar to above) help drone create "tiled" regions (drone will have to compute/interpolate these divisions on-board/live)
- They will be placed in the order that user wants to draw the contours of the roof
- How to collect them after?
 1. Use magnets/electromagnets
 2. ?

ArUco Marker



Recorded View

- Process:**
 - Drone flies freely around roof (manually operated)
 - Recording of roof is made
 - Each frame of the recording is saved to be checked for roof damages
 - Preprocess/filter out blurry images
 - Send all images as batches into the model for damage prediction
- How to show to user:**
 - Show just the recording:**
 - Contiguous frames with prediction % of damages are timestamped (time range)
 - These video segments are saved/highlighted in the overall video
 - Colour coded/labelled based on the defects at these locations
 - Segment defect regions (toggleable so we can see highlighted region vs unobstructed view of damage)
 - Localize defects to a map:**
 - ???

Example "video playback bar" with highlighted regions indicating different types of damages

- User can scroll to these positions or click ">>" to jump to the next damage detection

