

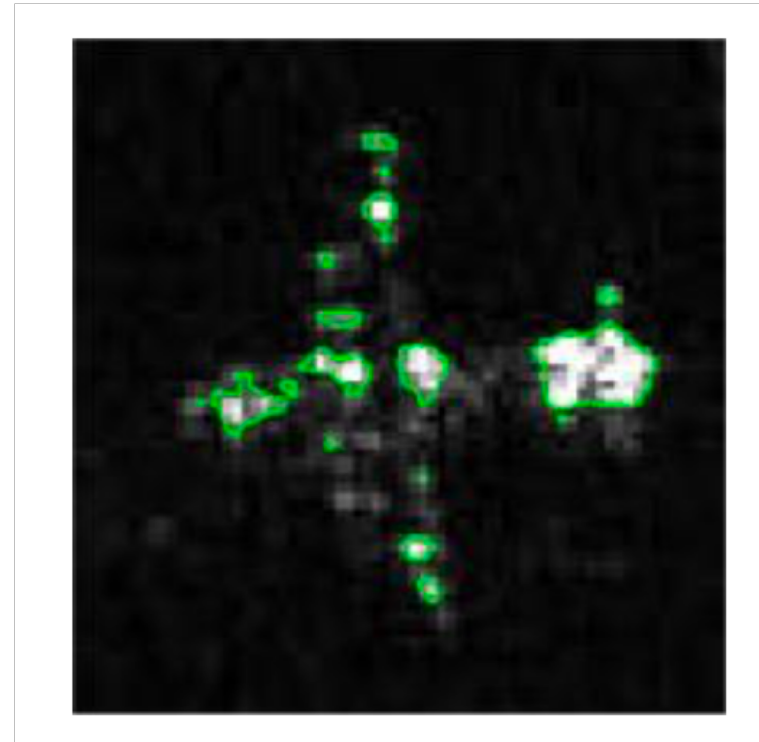
Shape Recovery on Low-Quality or Missing Image

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Motivation: Shape segmentation or recovery is an essential task in image processing, especially in remote sensing imagery. Due to the complicated imaging conditions, satellite images are usually noisy and blurred, which makes it challenging to recognize the actual shape of ground objects. In this project, we aim at recovering shape of remote sensing objects (e.g. aircraft) based on MCMC sampling and operations learned from class.



Goal and Methodology

Goal

Recover the shape of objects from noisy and incomplete remote sensing imagery

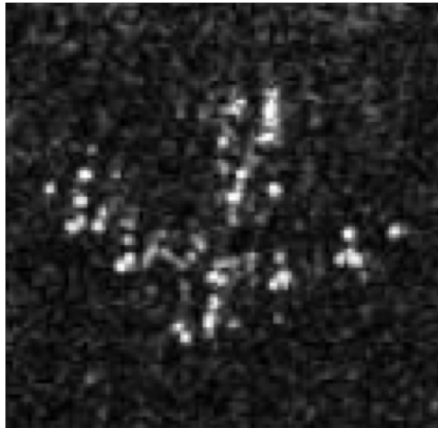
Plan of Action

1. Implement MCMC shape recovery method in paper [1] and validate it on toy dataset.
2. Apply the method in aircrafts from SAR radar imagery. Use morphological operations to improve the performance.
3. Evaluate with ground truth views obtained from Google Earth at same location and same time.

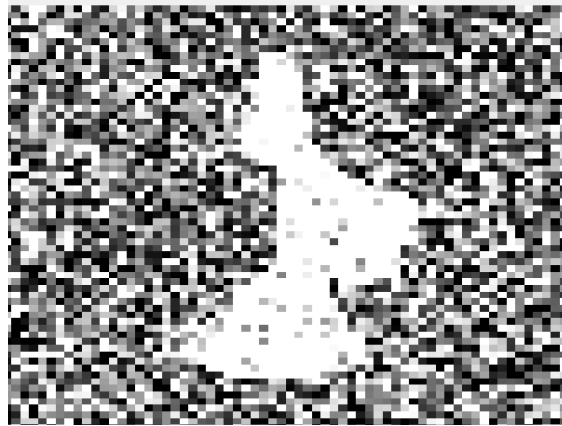
Dataset and Initial Results

- *Dataset*

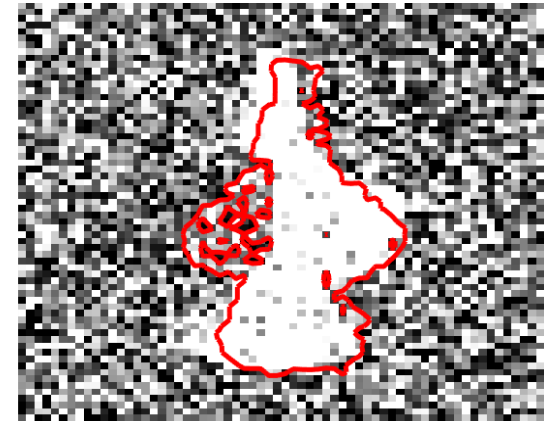
- SAR dataset: 30 aircraft objects obtained from SAR imagery on satellite (64 x 64)
- Aircraft dataset in paper [1], binary images (64 x 64)
- Aircraft objects obtained from SAR radar imagery. Noisy, blurred, and hard to see.
- Our implementation of MCMC shape recovery method proposed in paper [1].



Noisy Input



Incomplete



Result: Our implementation