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CV Lab Project, Lab 4: Final Results

Group A0:
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Methodology

- Anomalies detected from Mahalanobis distance
- Using timesteps 0, 3 and 6 to detect static/moving objects
- Remove anomalies that are similar to background using first-order statistics

Results

- Average precision: 43.33%
- Execution time*: ~1sec
  [* image merging time excluded]
- No learning included
- Detection of most of the static objects are excluded

Limitations

- High dependency on hyperparameters
- Problems detecting people with slight movement respect to the background
- Problems detecting occluded people in the center frame

All timesteps considered

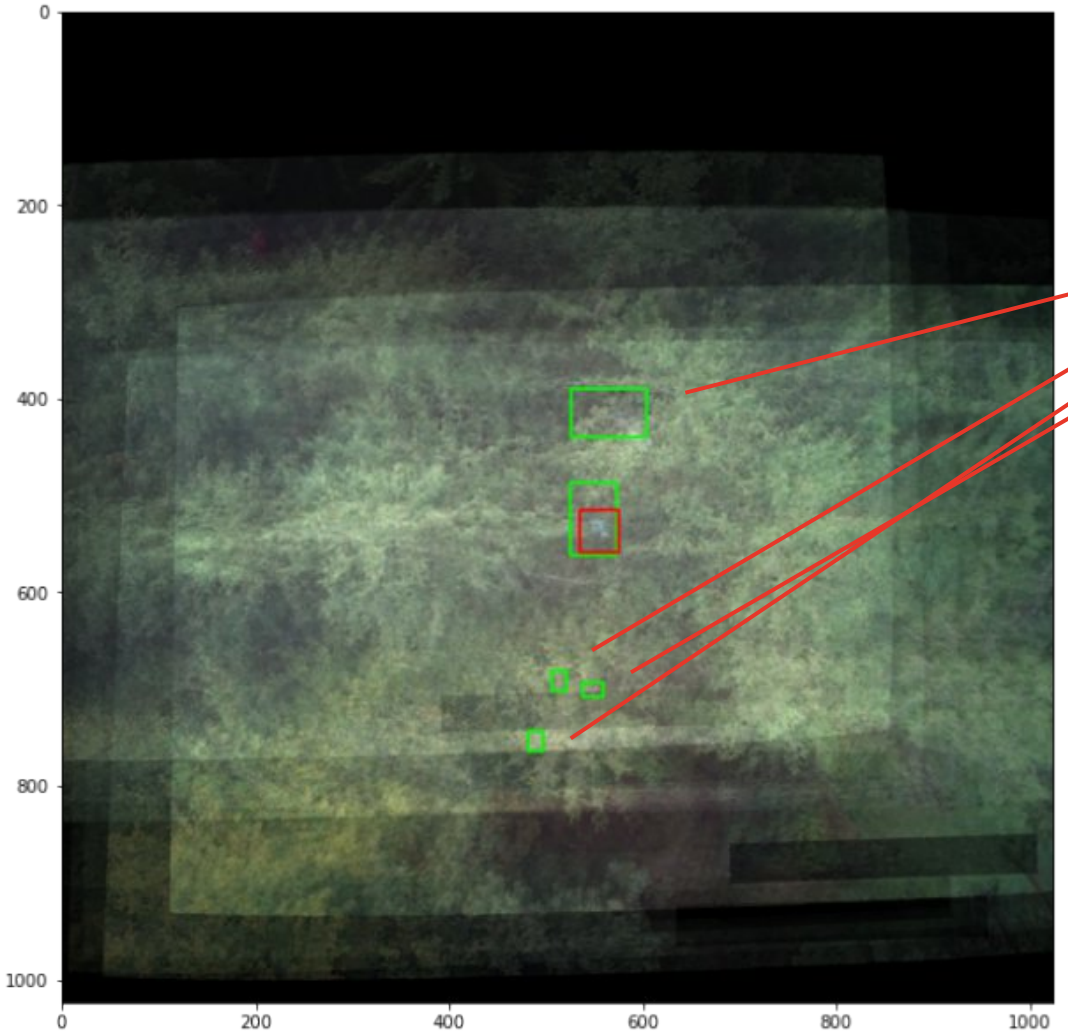
- Anomalies detected from Mahalanobis distance
- Find static objects by multiplying all binary images from all timesteps
- Avoid occlusion by adding up the static-object-free binary images

✓ Occlusion on center frame solved

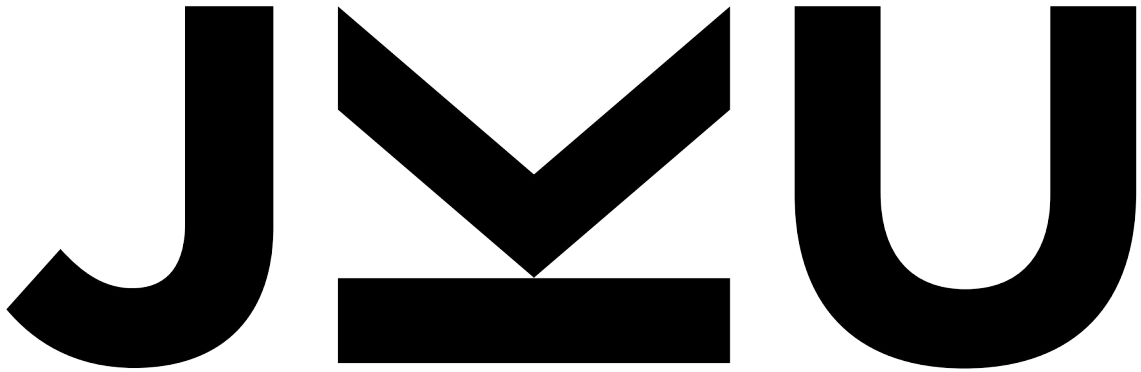
– Impossible to rule out misclassifaction by pure probabilistic techniques

– Worse average precision on validation dataset

Misclassification when considering all timesteps



Background detected as anomaly !



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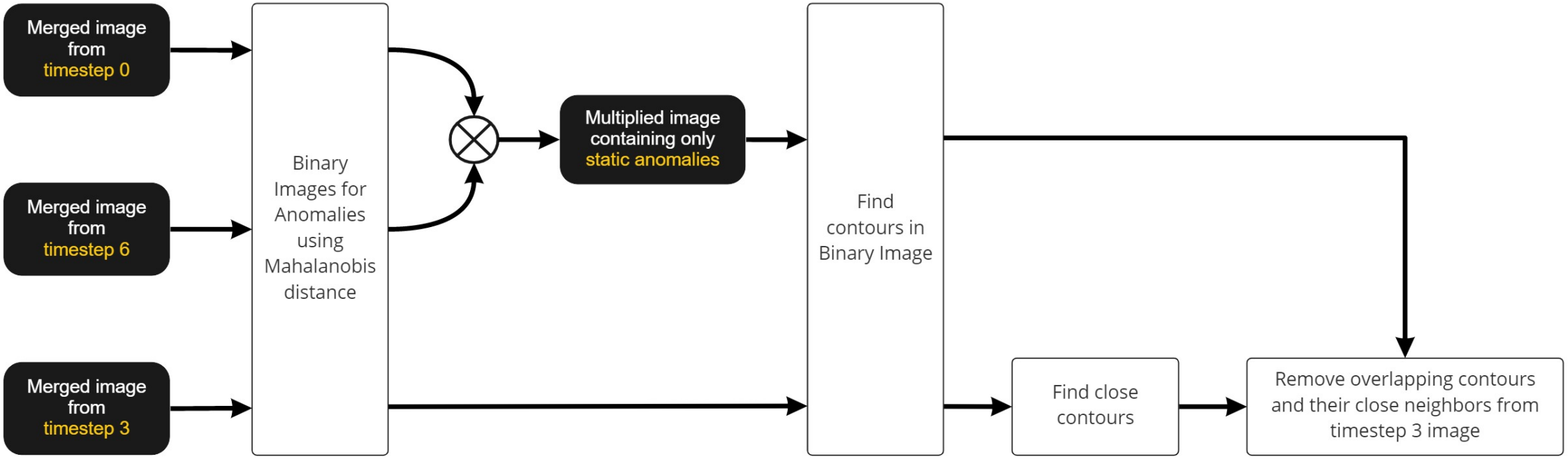
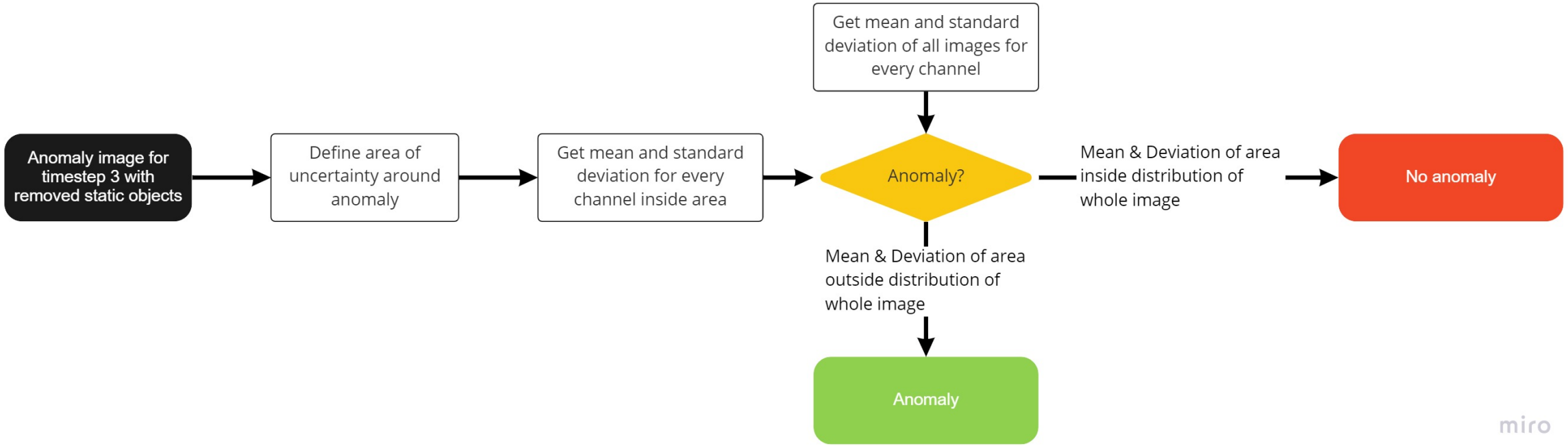
Anomaly detection algorithm




Anomaly image for timestep 3 with removed static objects
Define area of uncertainty around anomaly
Get mean and standard deviation for every channel inside area
Get mean and standard deviation of all images for every channel
Anomaly?
Mean & Deviation of area inside distribution of whole image
No anomaly
Mean & Deviation of area outside distribution of whole image
Anomaly