Using Machine Learning to Create Heatmaps on Valorant
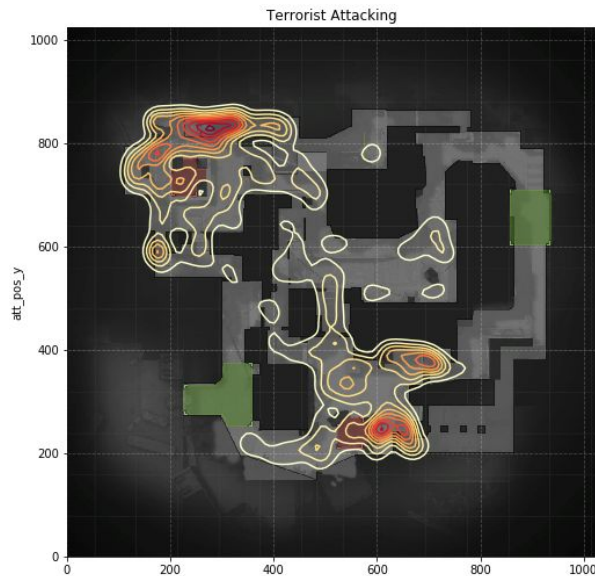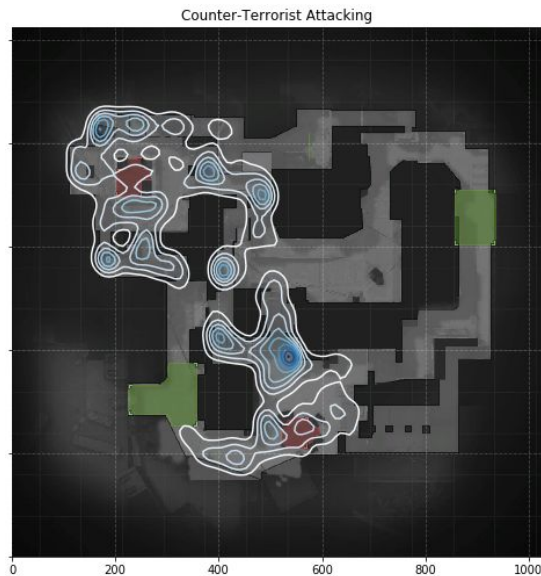
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Significance

Heatmaps.

- Shows trends, habits, common positions.
- Useful for all kinds of players
- Ease to access Information
- Data required for these Heatmaps are easily accessible in Counter Strike, but not in Valorant (secure).

Counter-Terrorist Attacking
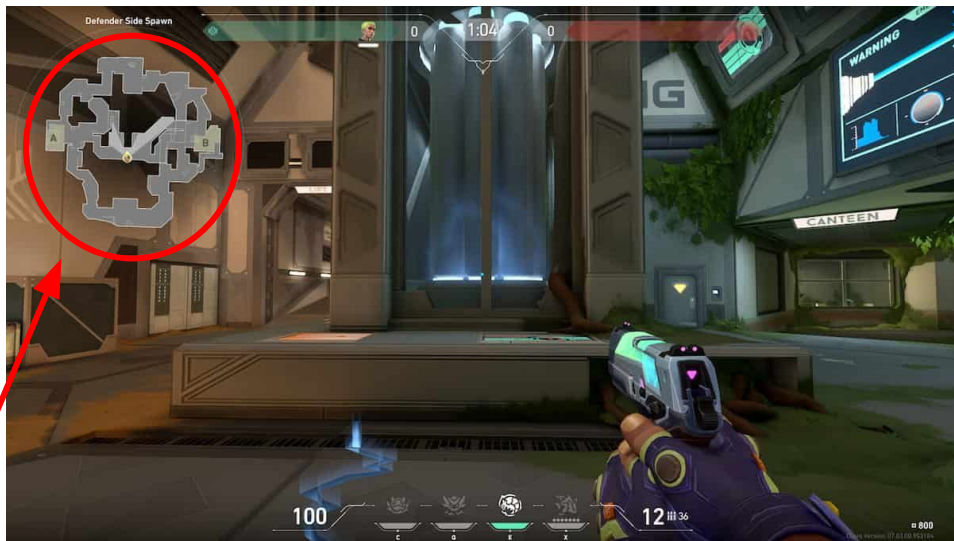

Terrorist Attacking

Background

Valorant VODs and Heatmaps

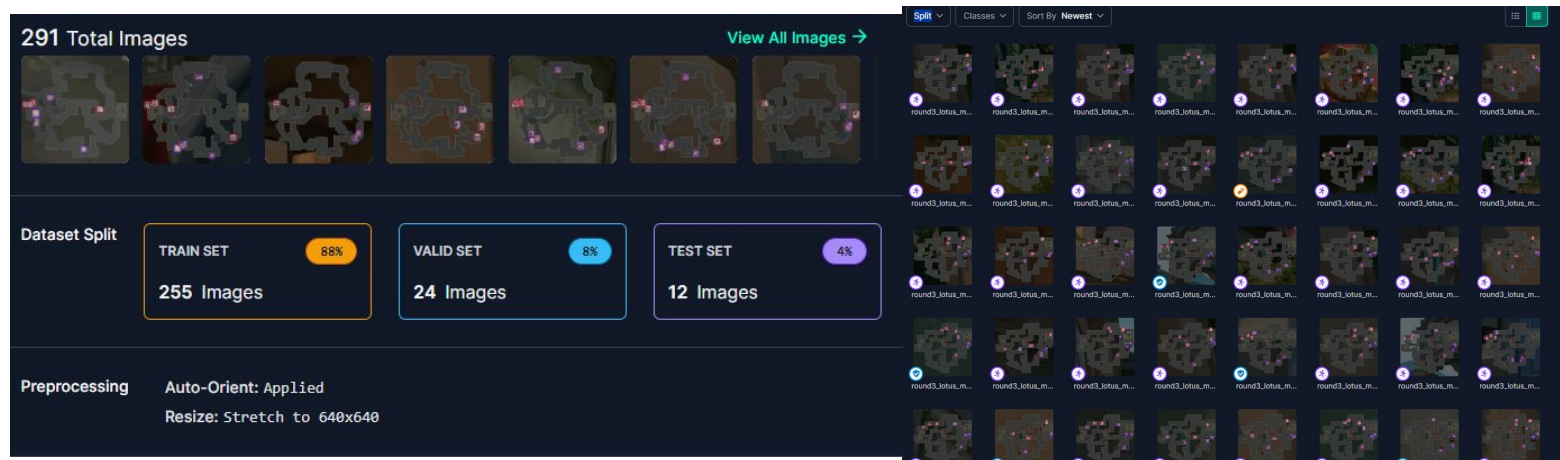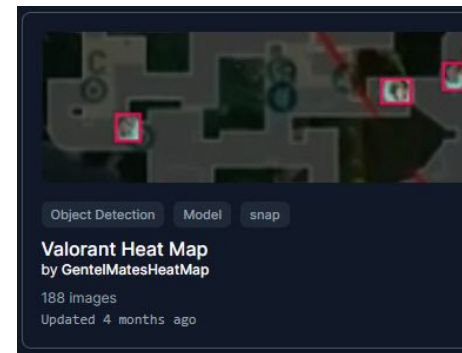Workaround: VODs, and getting analytics from them instead

Can work with videos, livestreams, still images, all you need is the MINIMAP.

Material: Machine learning for object detection

YOLOv9

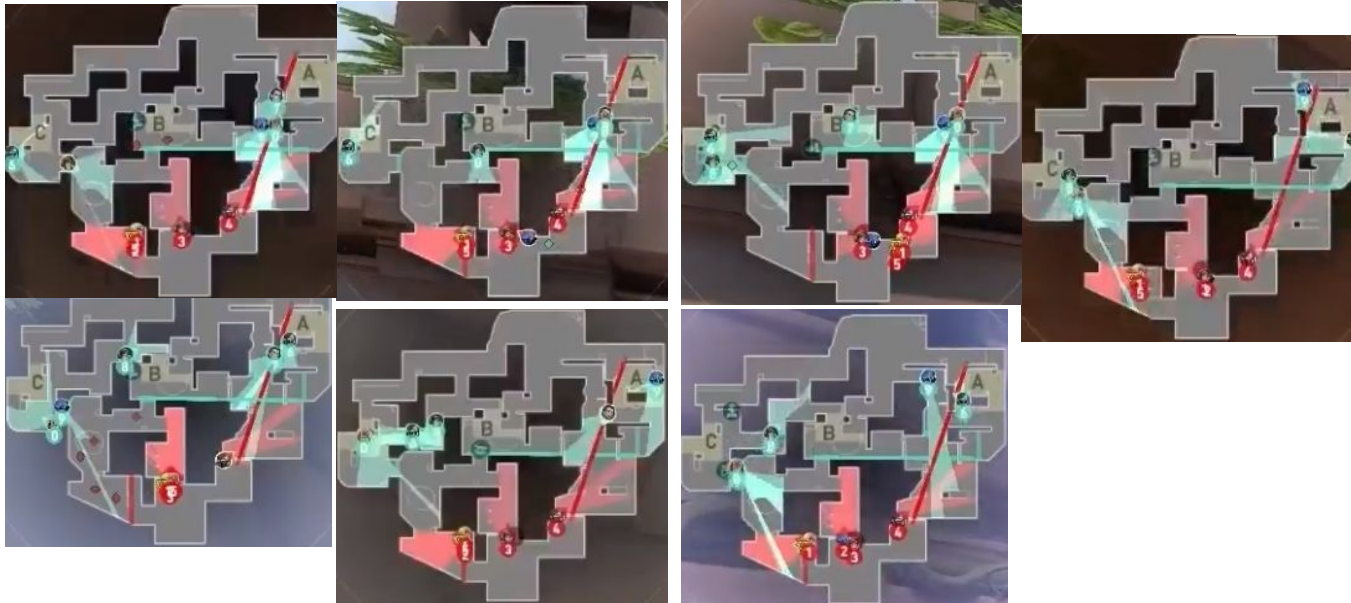YOLOv9 is an object detection model architecture released on February 21st, 2024.

Object Detection   Model   snap

Valorant Heat Map
by GentelMatesHeatMap

188 images
Updated 4 months ago

291 Total Images

View All Images →

Dataset Split

TRAIN SET	88%	VALID SET	8%	TEST SET	4%
255 Images		24 Images		12 Images	

Preprocessing   Auto-Orient: Applied

Resize: Stretch to 640x640

Split   Classes ∨   Sort By Newest ∨

Dataset from:
https://universe.roboflow.com/gentelmatesheatmap/valorant-heat-map/dataset/2

4

Method: Inputting custom data

Positions of all players at round start:
Estudyante Esports, OBE (atk) vs MKL(def), Lotus

Method: Machine learning for object detection

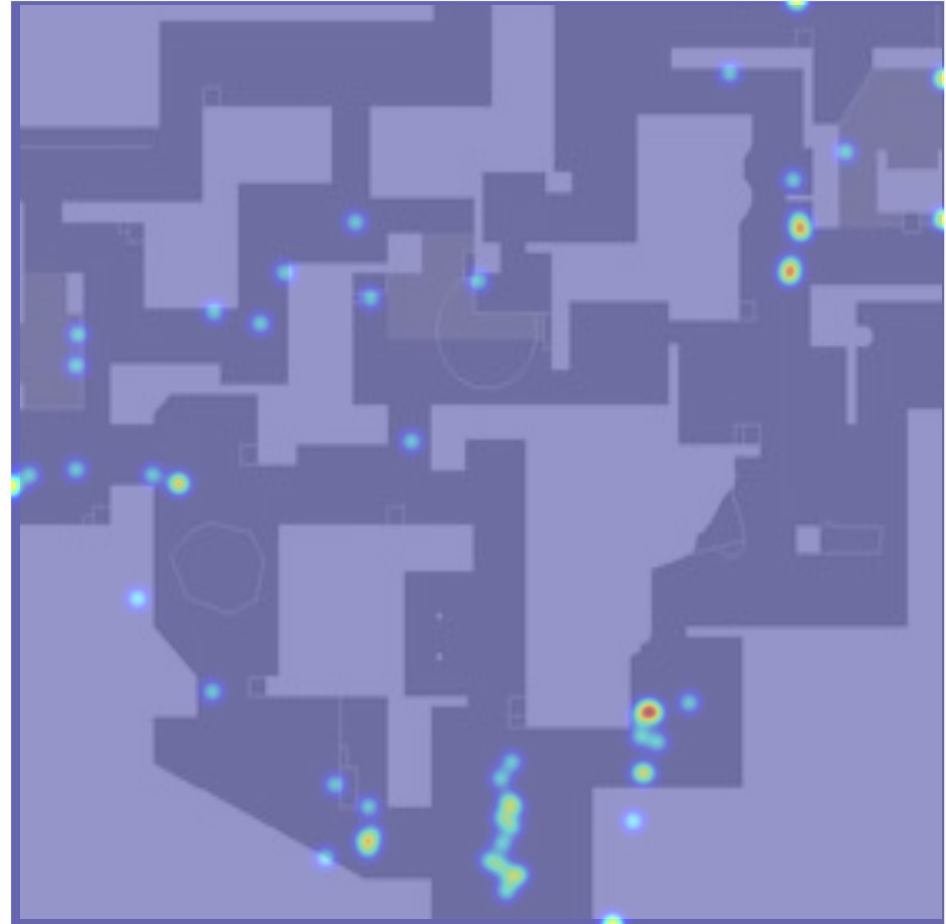https://universe.roboflow.com/gentelmatesheatmap/valorant-heat-map

Result

-inaccurate

Comparing it to the actual data,

Some areas highlighted in the heatmap were not utilized in the actual data.

Limitation:

Non-uniform image sizes

Conclusion

-Machine Learning allows for the formation of valorant heatmaps from the source of a minimap. This allows of a wide range of analytics. (ex. Spike plant, optimal positions, Most common and uncommon played spots, etc.)

Recommendations:

-More Accurate Predictions (Bigger Dataset)

-More data not just showing positions at round start, can show during events in round(frags, deaths, etc.), Allows for more data analytics.

-Uniform Minimap Orientation and size

References

https://universe.roboflow.com/gentelmatesheatmap/valorant-heat-map/dataset/2

https://github.com/igoyalsamarth/val-data-stuff/tree/main/Radar%20Heatmap

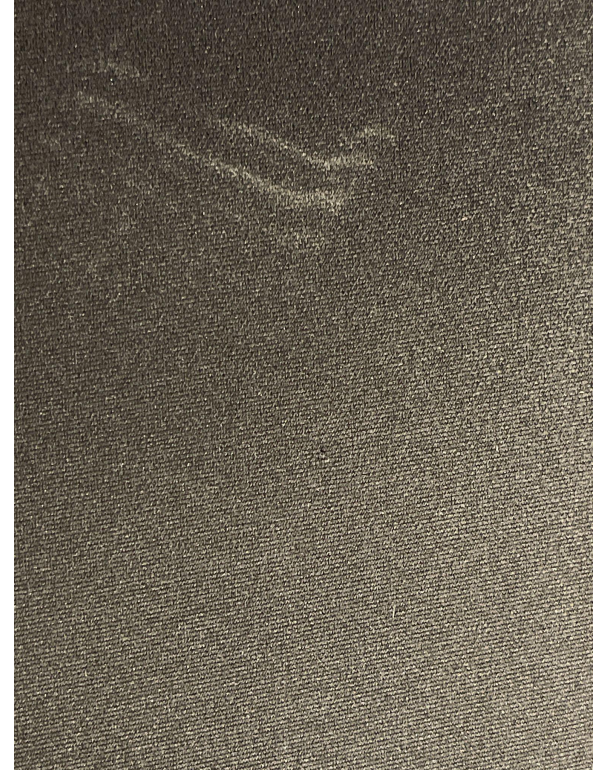https://docs.ultralytics.com/models/yolov9/

Using Image Processing to on Mousepad Weaving

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Lance Clemente

Background

Cloth mousepad

- Used and Dirty
- Has a woven cloth pattern
- Similar to our Module B2 Lab Assignment
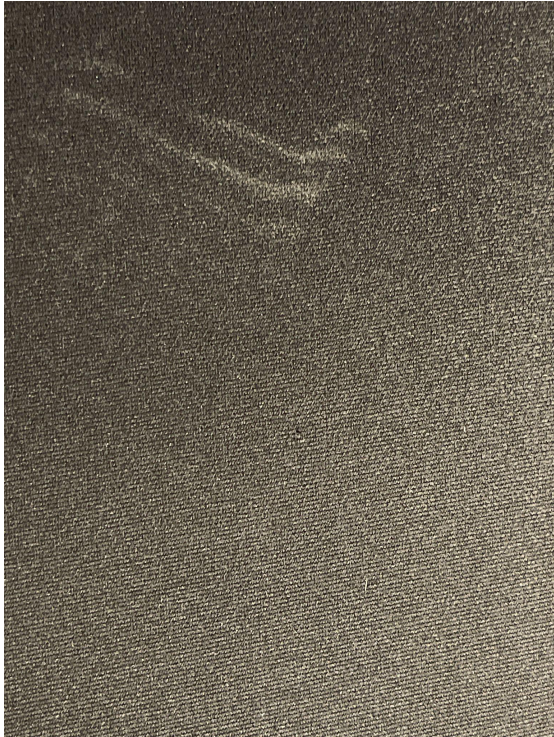- Observe the mousepad with the woven pattern filtered out

Method: Fourier transform pattern filtering

1. Greyscale & mean value
2. FFT
3. Identifying and
   Masking symmetric
   Peaks on FFTed RGB
   Channels of original image
4. Inverse FFT and observe
   The mousepad without the cloth
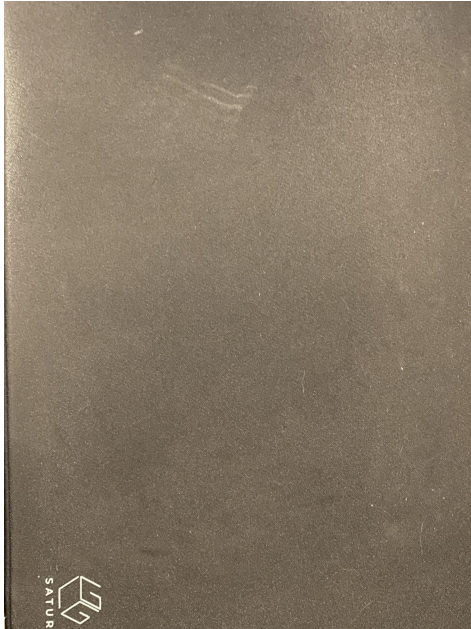   weave.
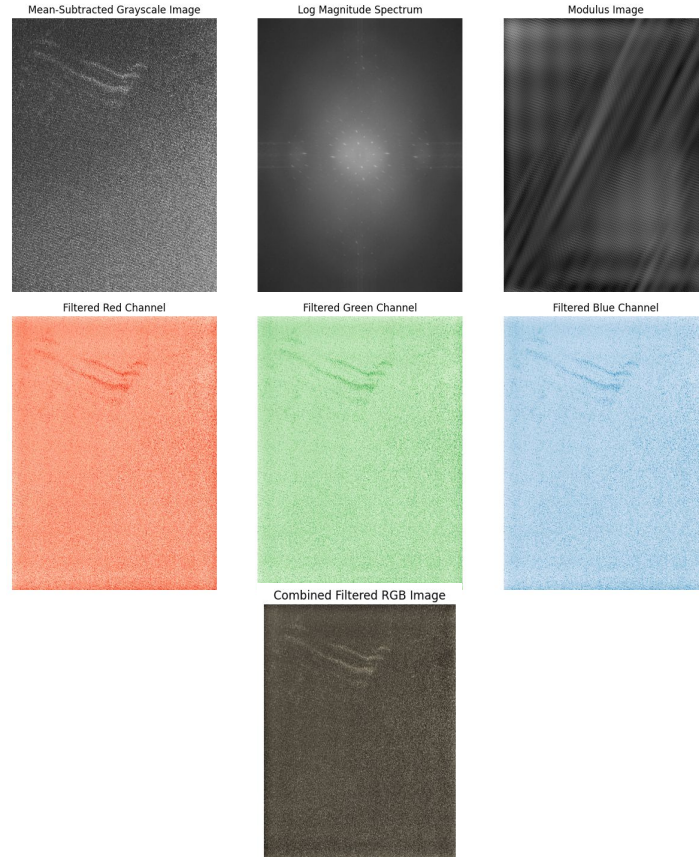
Results: Pattern filtered out

- Light shine on cloth pad was also filtered out.
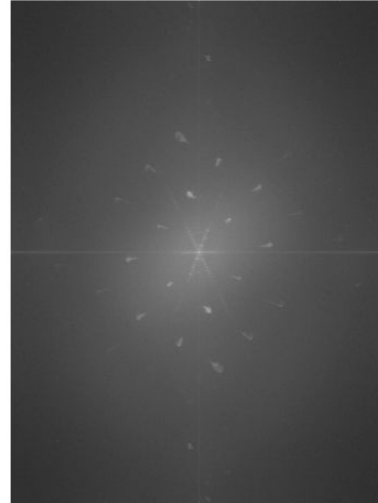

Combined Filtered RGB Image

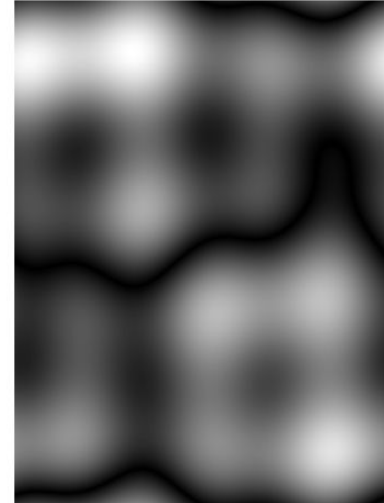# Limitations: Photo taken from afar, cloth pattern cannot be seen.

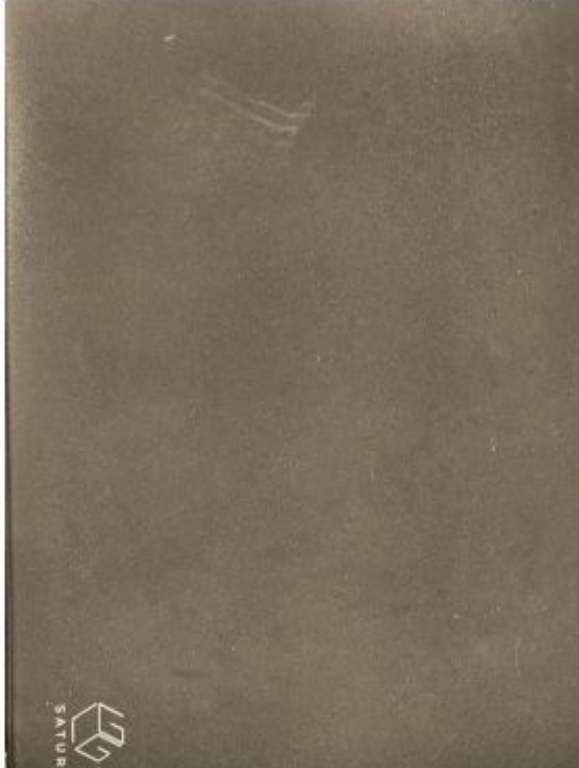Mean-Subtracted Grayscale Image

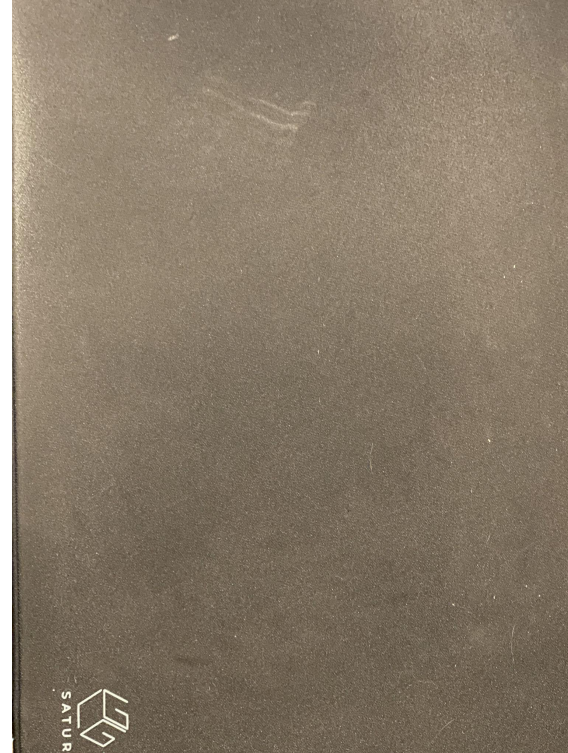Log Magnitude Spectrum

Modulus Image

Limitations: Photo taken from afar, cloth pattern cannot be seen.

Combined Filtered RGB Image

Original

Recommendations

- can be used to see unusual objects on plain cloths

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Thank You!