

# Auto Eraser

Rahul Karanam

# What?

This is a pipeline that smoothly combines the masking power of the instance segmentation models defined with the in-painting functionalities from the generative models in order to remove as many different types(80) of objects from a video or an image.

# Why?

- (I) Image reconstruction
- (II) Generating Training Datasets
- (III) Video editing

# Background

IMPLICIT INTERNAL VIDEO INPAINTING(2021)



Input

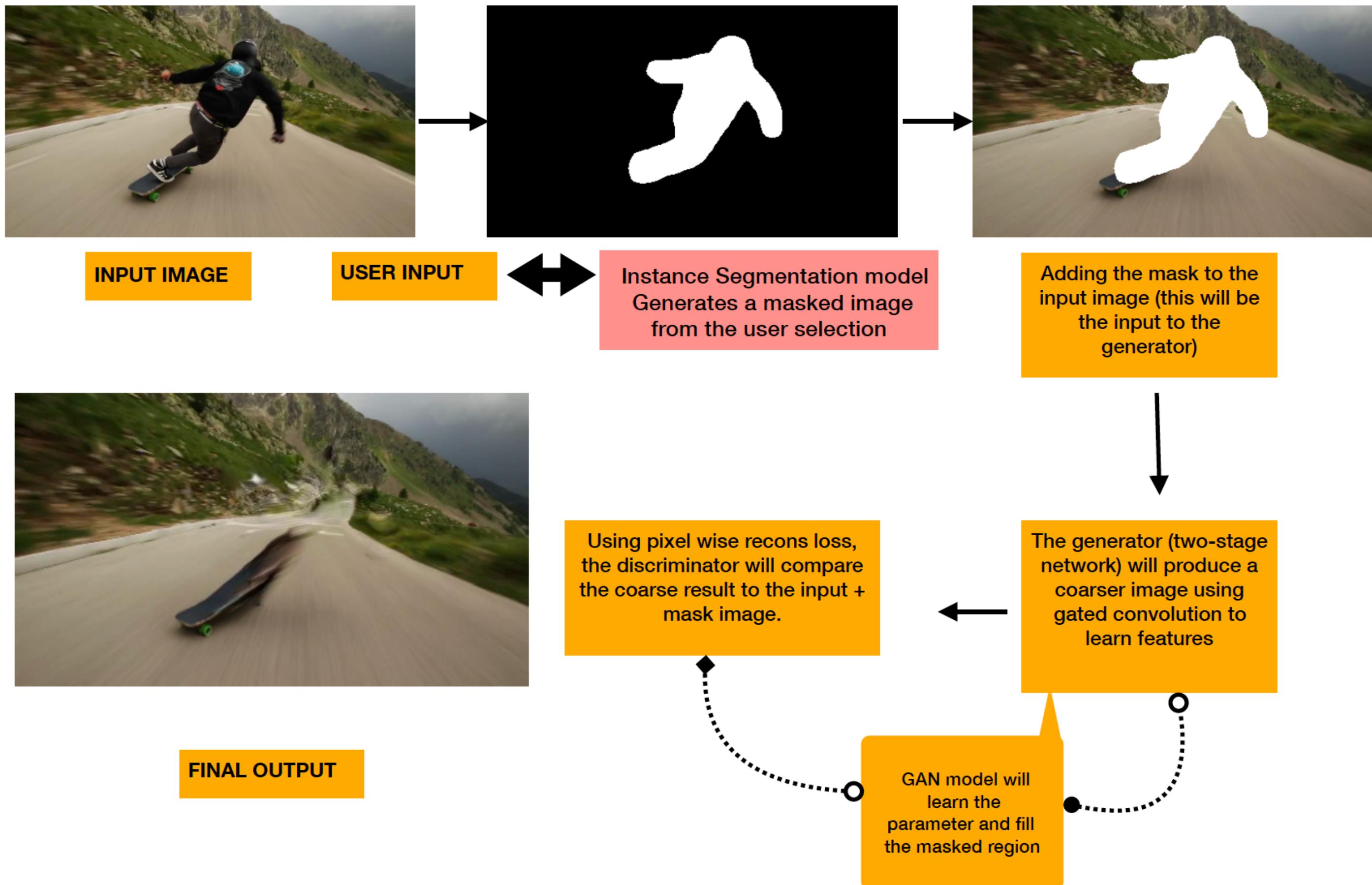


Output

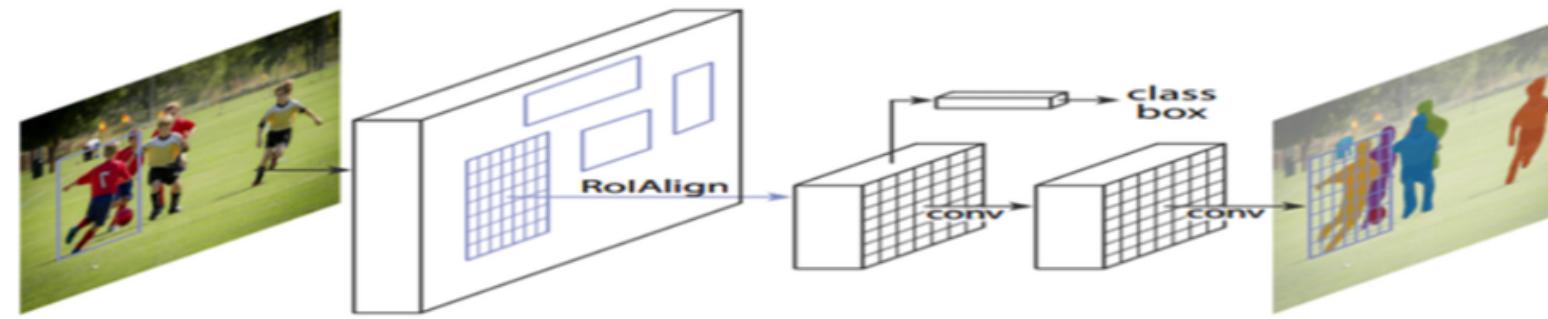


FLOW GUIDED VIDEO COMPLETION(2020)

# Pipeline for Auto Eraser



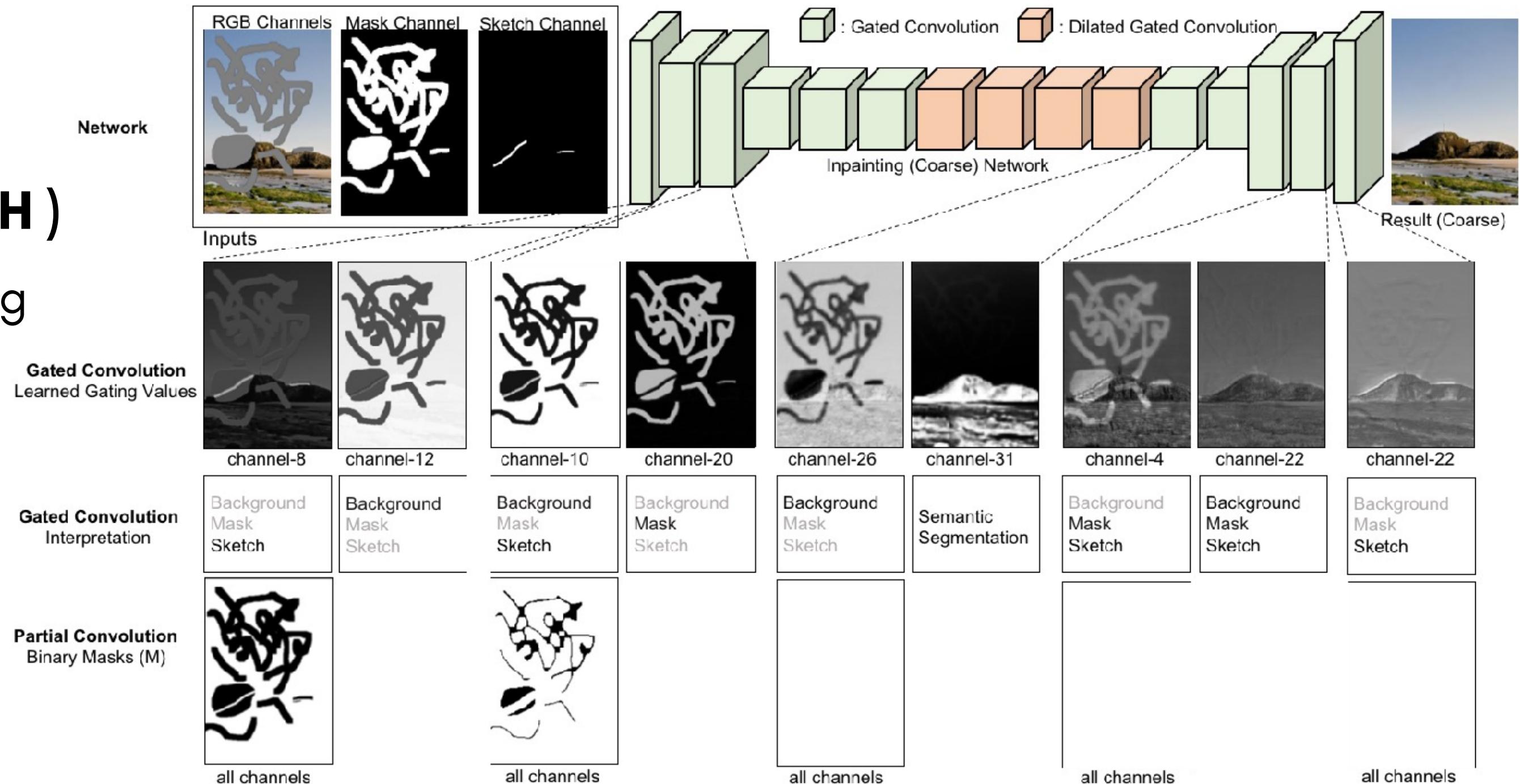
# Network Architecture



# MASK R-CNN

Instances Segmentation model

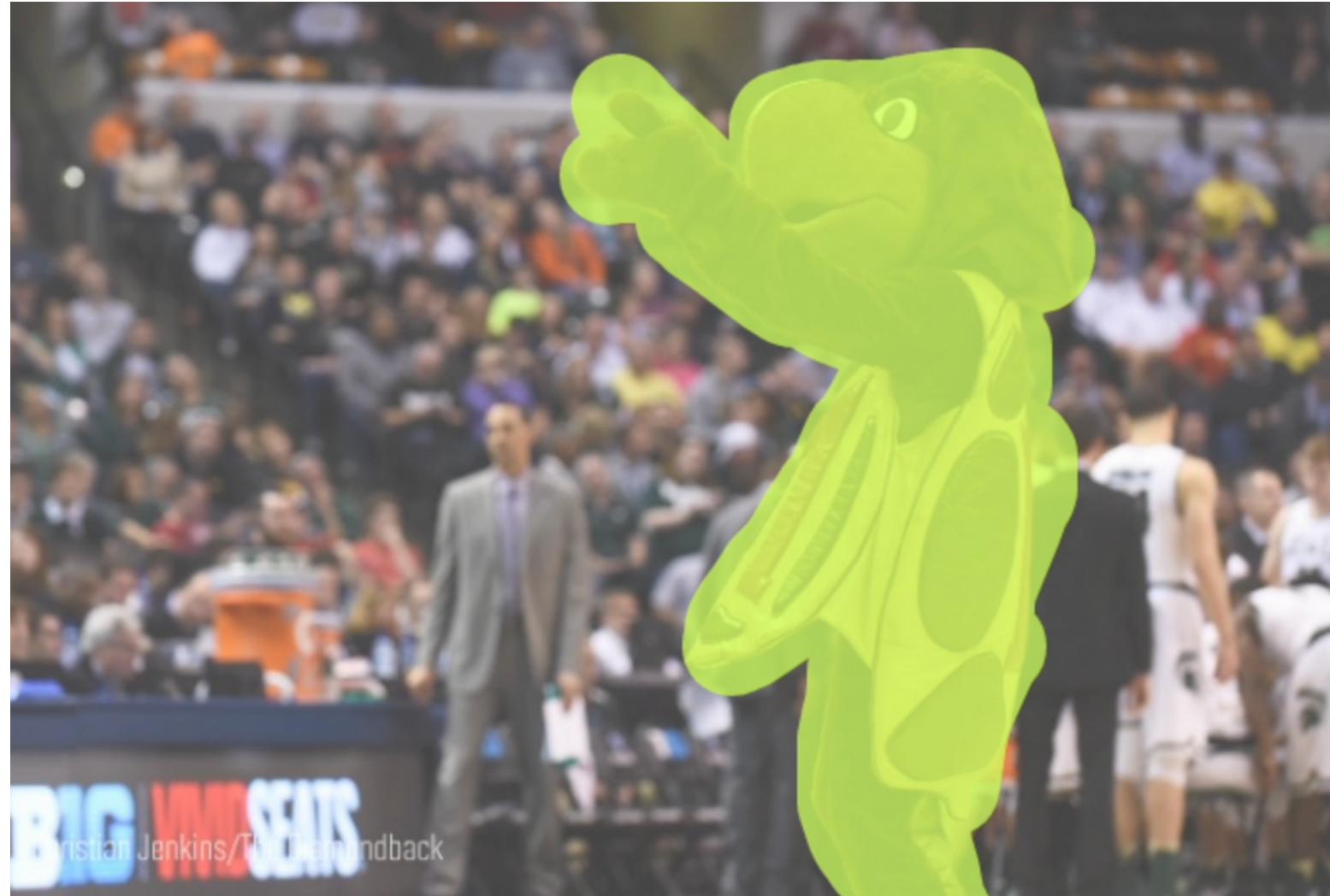
## SN-GAN(PATCH) Mask Inpainting Algorithm





Here are some predictions

# Removal of object from an image (Mask inpainting using the Patch SN GAN model



INPUT + MASK

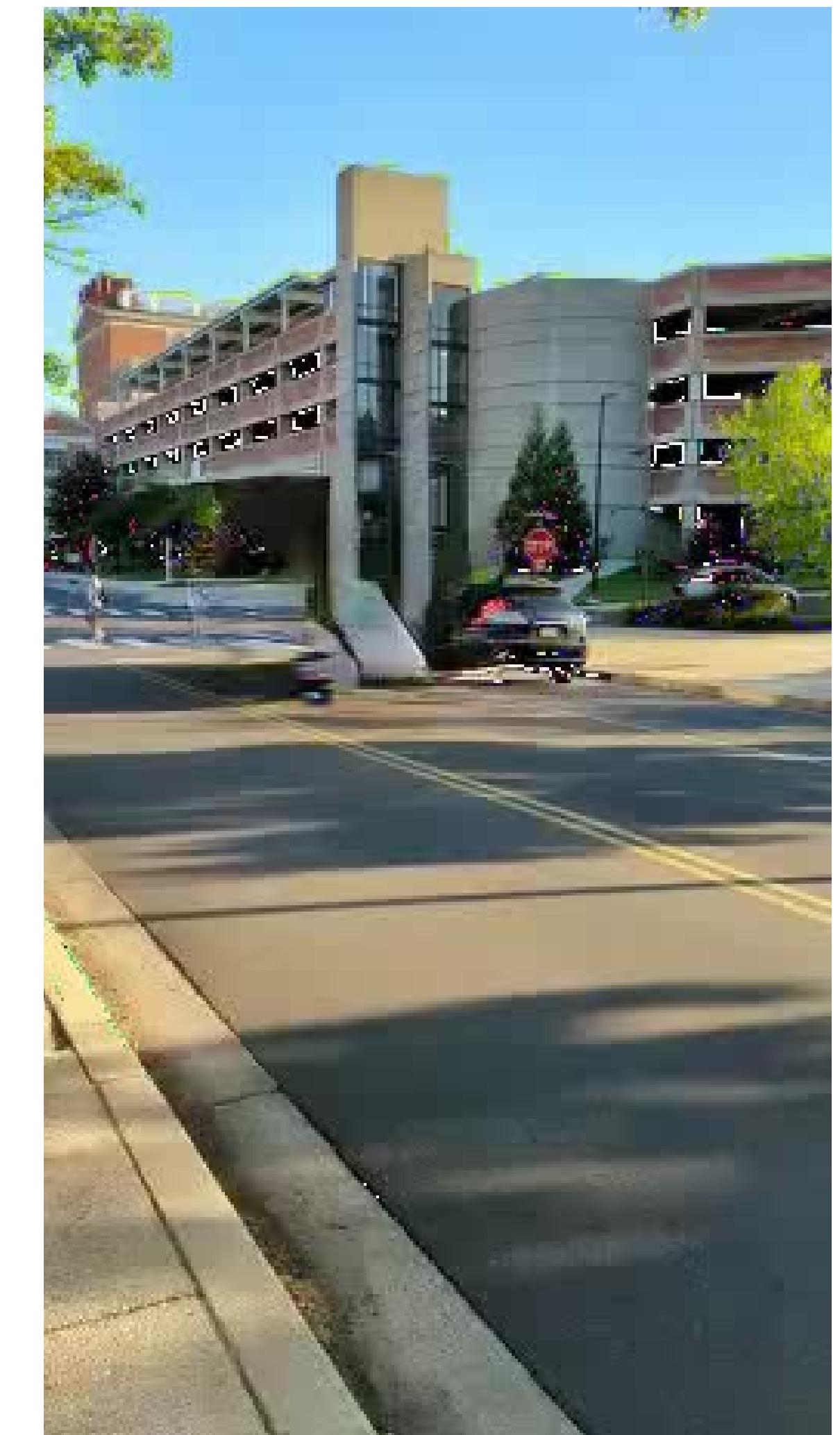


OUTPUT

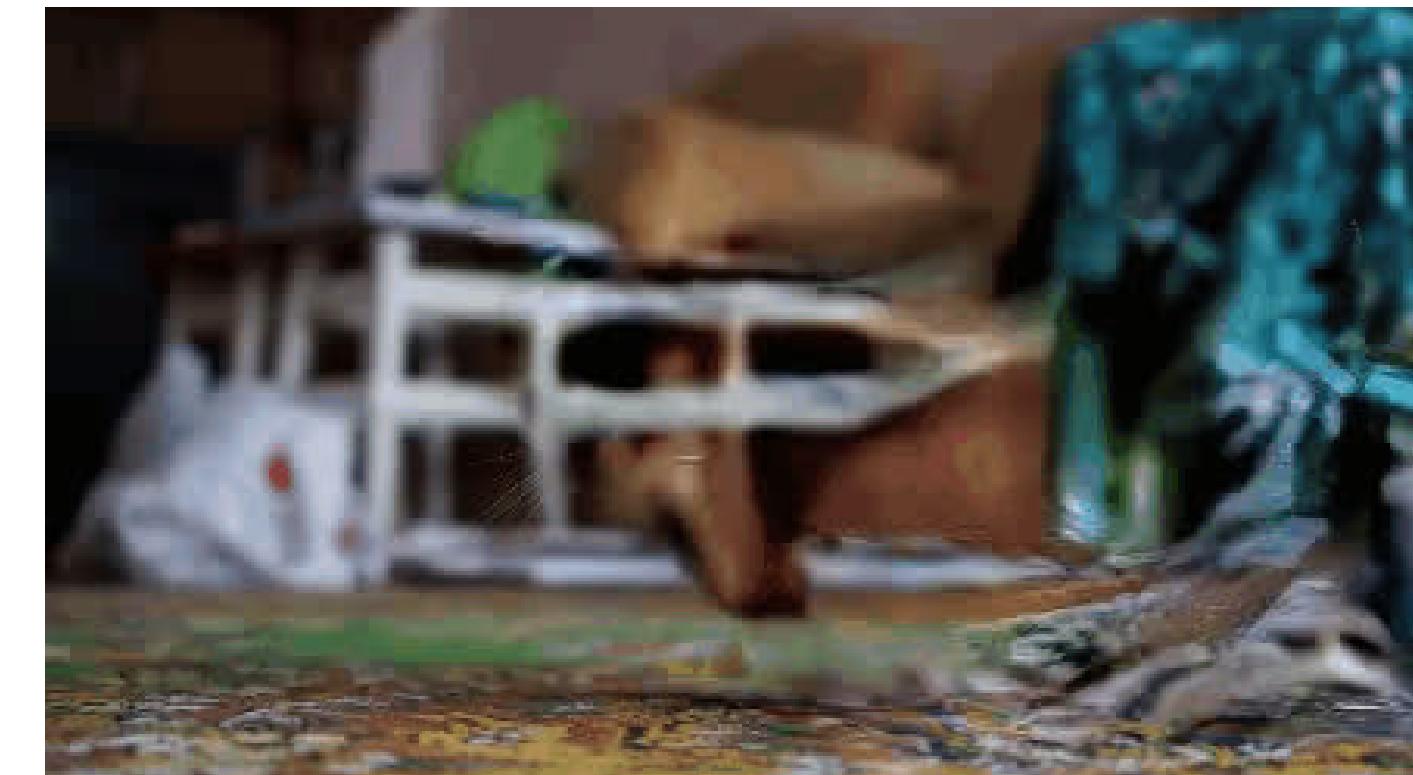
# Demo - 1



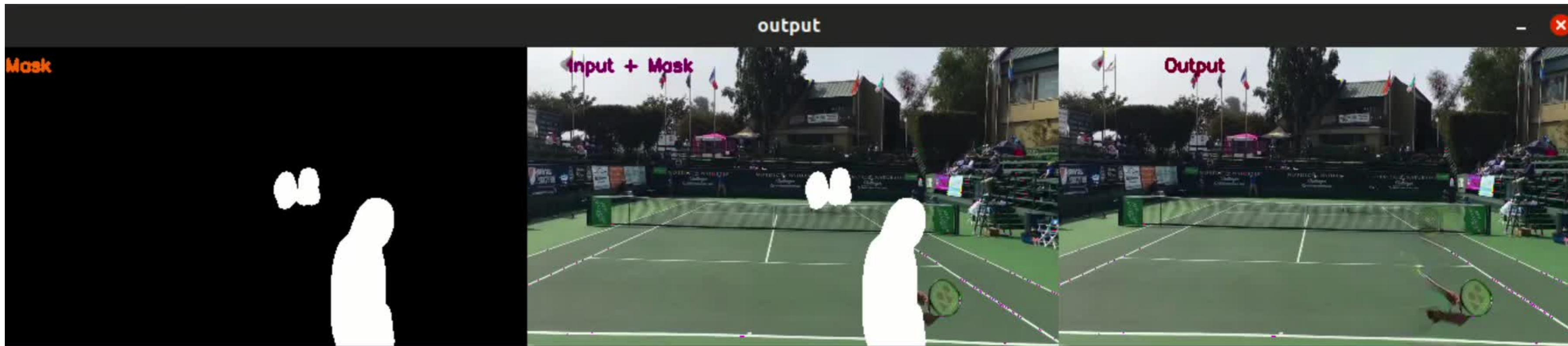
# Demo - 2



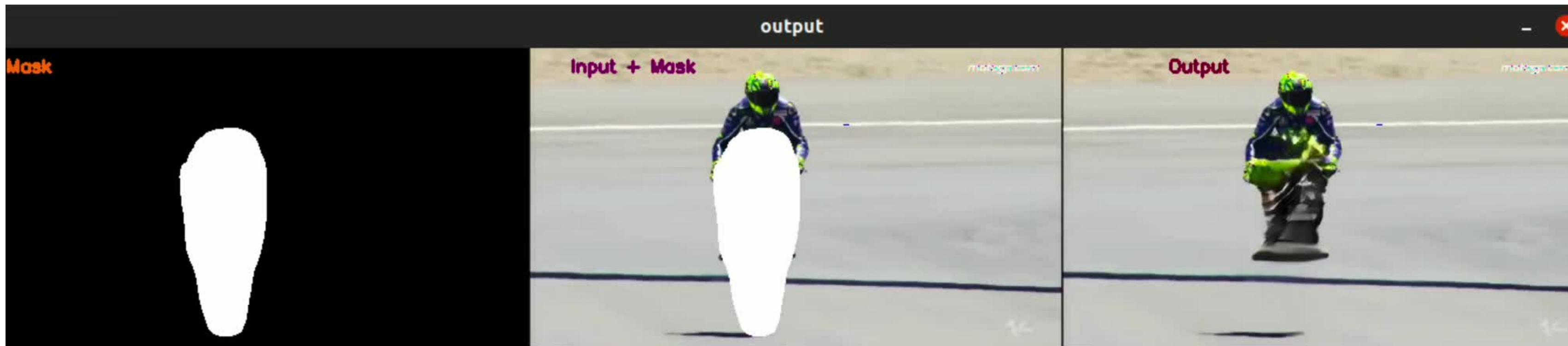
# Demo - 3



# Demo - 4 (Multi - objects)



# Demo - 5 (Failed scenarios)



# Further thoughts

## Generating masks using a fusion of two approaches

Combining the outputs of Vision transformer and detectron2 may aid in the accurate detection and generation of masks.

## Adding optical flow information to the inpainting network

We can add optical flow information to the generator in order to estimate proper valid pixels.

# References

- Mask R CNN
- Free-Form Image Inpainting with Gated Convolution
- Implicit video inpainting
- Flow-edge Guided Video Completion
- <https://github.com/facebookresearch/detectron2>

GITHUB

<https://github.com/karanamrahul/Auto-eraser>

# Learnings from Auto eraser

How Instance  
segmentation  
works?

How to use GAN  
for generate the  
missing pixels?

Still need to  
learn how to  
reduce overall  
time complexity  
(time - 7s for  
each frame )

Thanks !!