

How to build a real-time AI face mask detector

Dr Henry Lydecker

Sydney Informatics Hub



COVID-19 and face masks



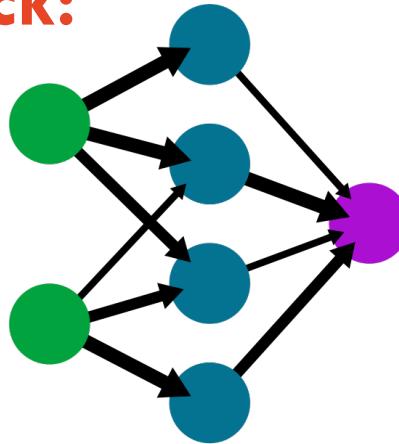
COVID-19 and face masks



Try it here!!!



Face Mask AI Starter Pack:



YOLO



Transfer Learning

Transfer Learning



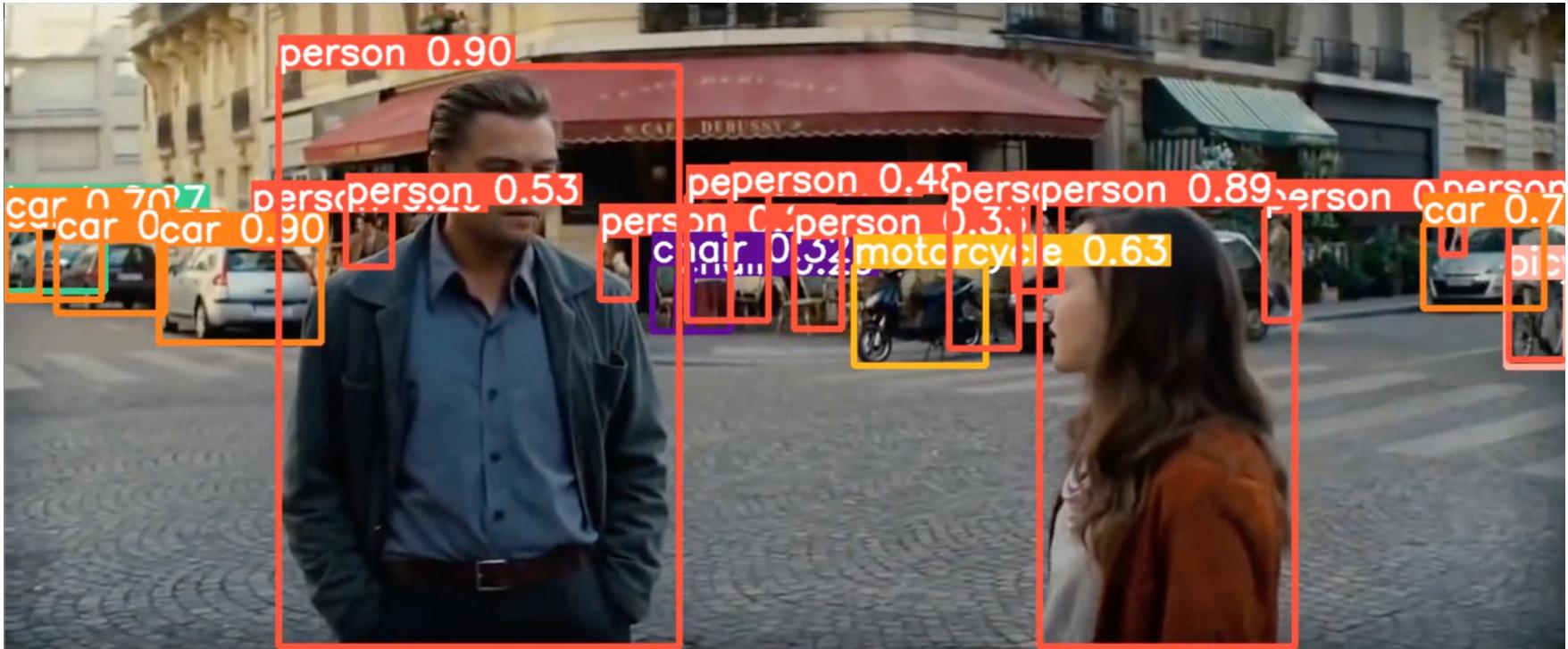
Transfer Learning



How good are pretrained models?



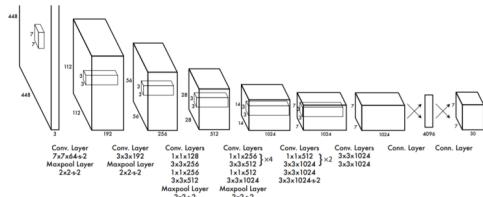
Pretty good!



Fine tuning pre trained models



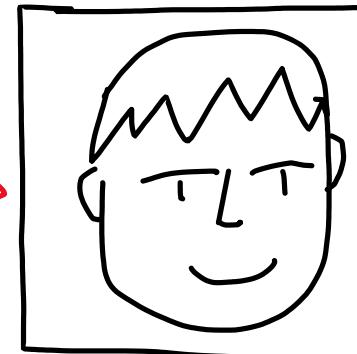
YOLO



J Redmon et al 2016



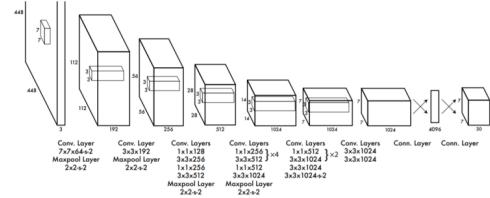
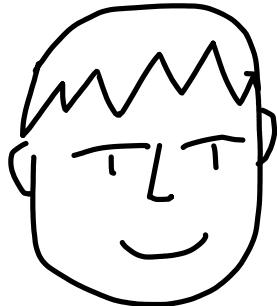
no mask



mask



What does a YOLO model look like?



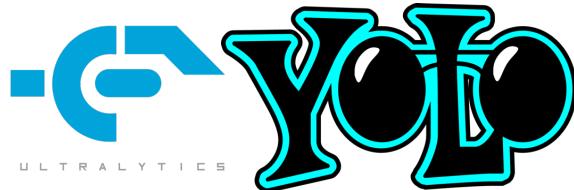
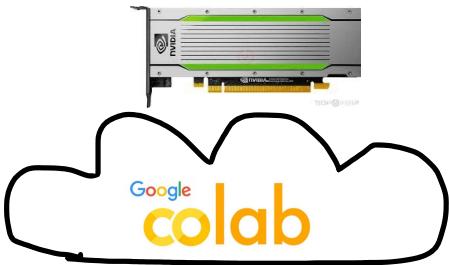
85 %

no mask

Which looks like this if you expand it...



Recipe



Let's do it!



Are you wearing a mask?

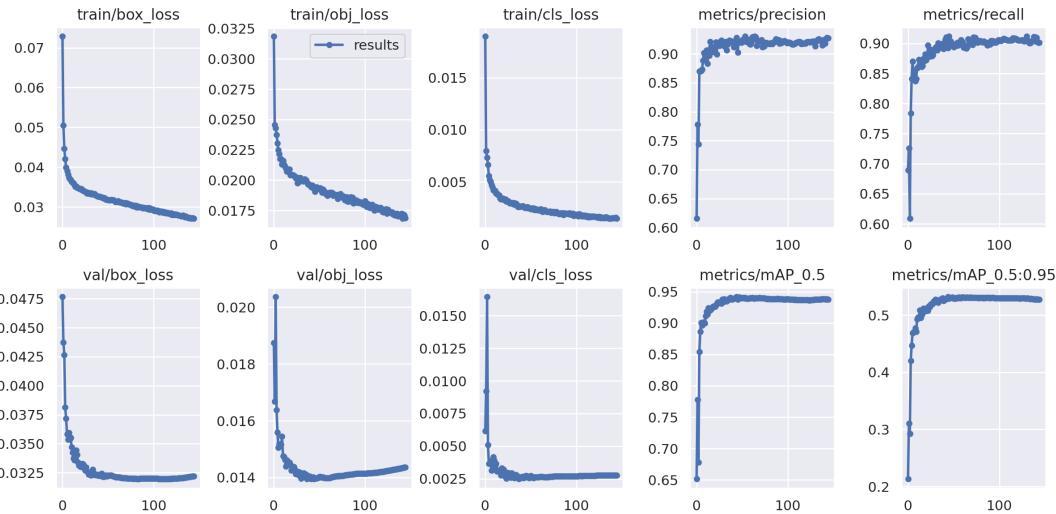
Detecting masked and unmasked faces with YOLOv5. Take a picture, upload an image, or click an example image to use.

Original Image


Output Image


Clear **Submit**

How do you assess performance?



Truth



Predictions



Delicate balance of model training

Images like what the model
was trained on



“Overfitting is the path to the dark side”
-Yoda

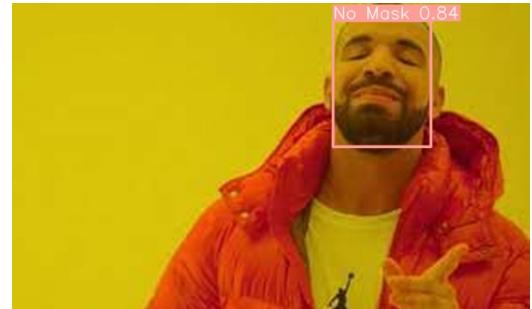
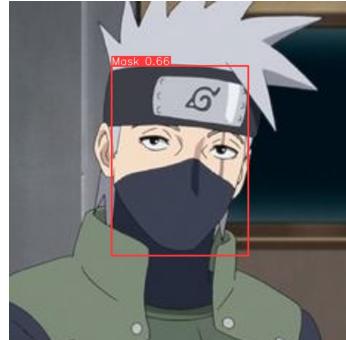
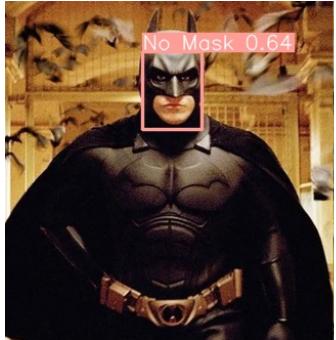


Weird random stuff the
model has never seen

First attempt



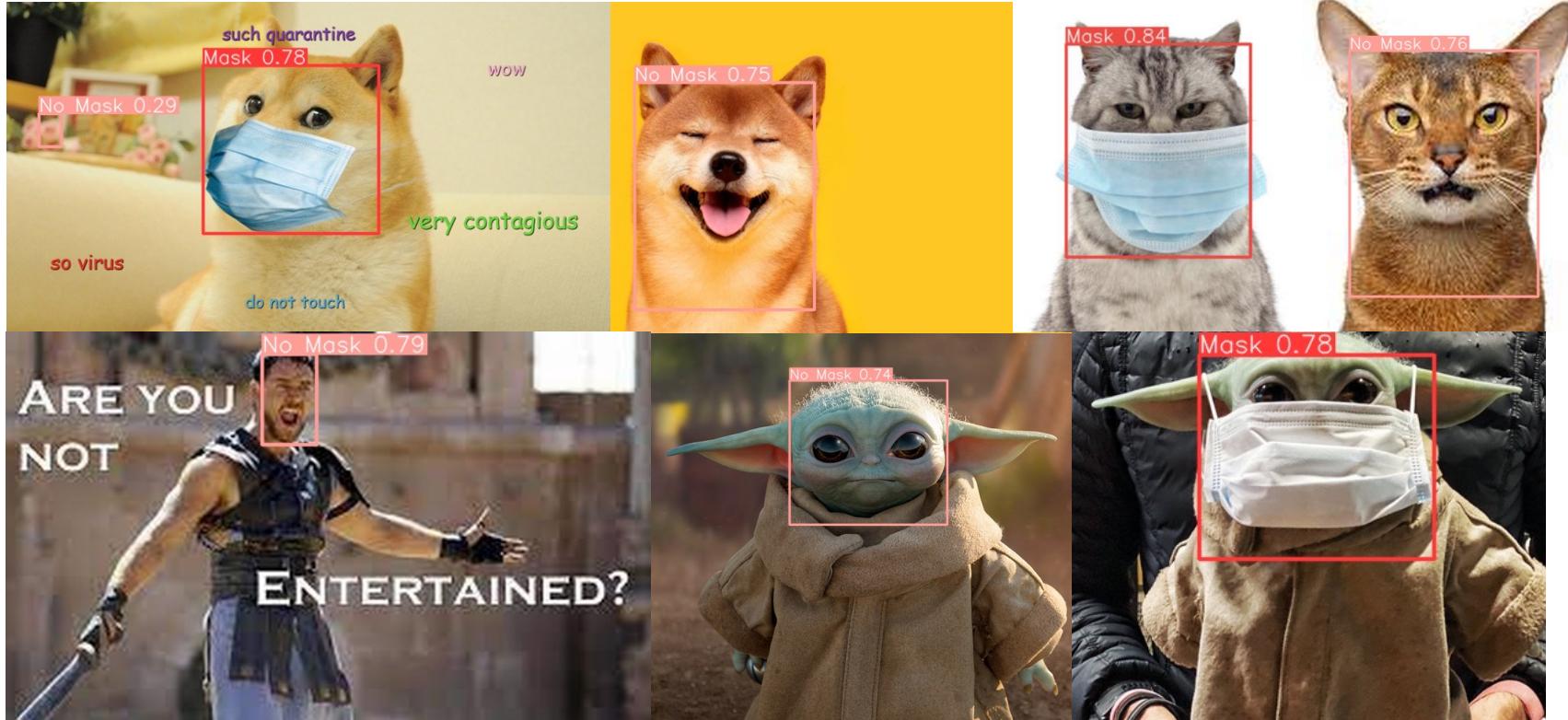
Current best version



Course Materials

- <https://github.com/Sydney-Informatics-Hub/cv-demo>
- GitHub Repository: <https://github.com/hlydecker/are-you-wearing-a-mask>
- Face Masks dataset on Kaggle:
<https://www.kaggle.com/datasets/henrylydecker/face-masks>
- Live Web App: <https://huggingface.co/spaces/hlydecker/are-you-wearing-a-mask>
- Original YOLO: <https://pjreddie.com/darknet/yolo/>
- YOLOv5: <https://github.com/ultralytics/yolov5>

Out of Domain Prediction – Animals and Baby Yoda!



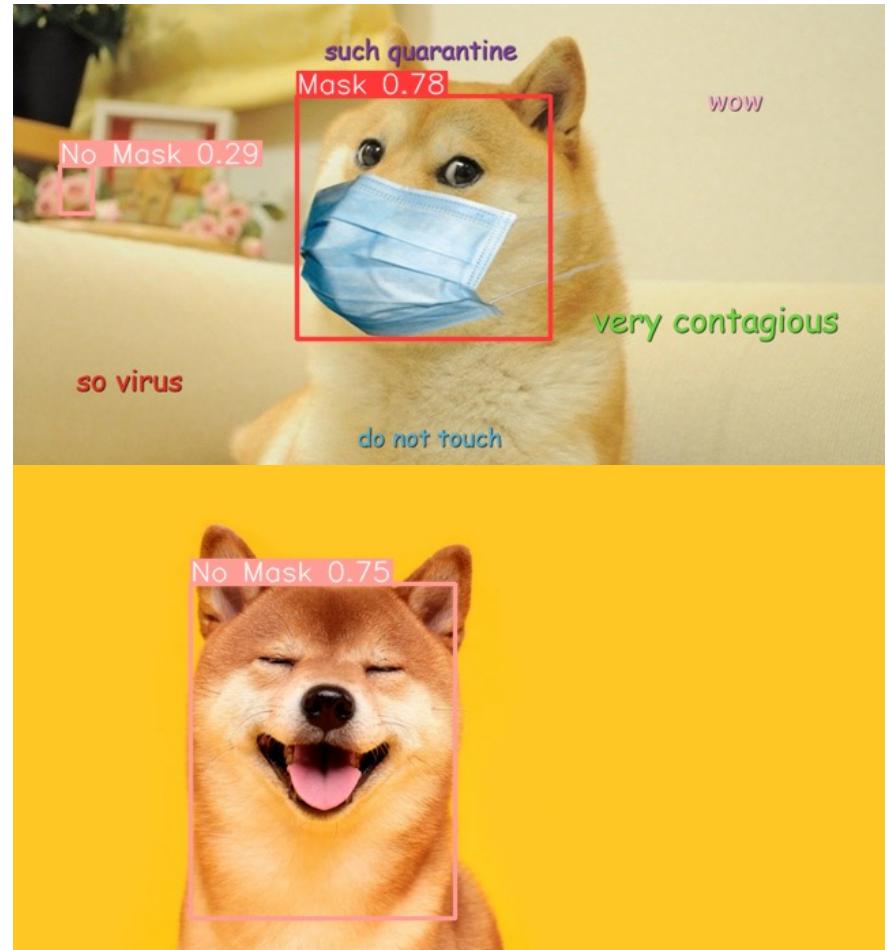
How to build a real-time AI face mask detector

Dr Henry Lydecker

Sydney Informatics Hub

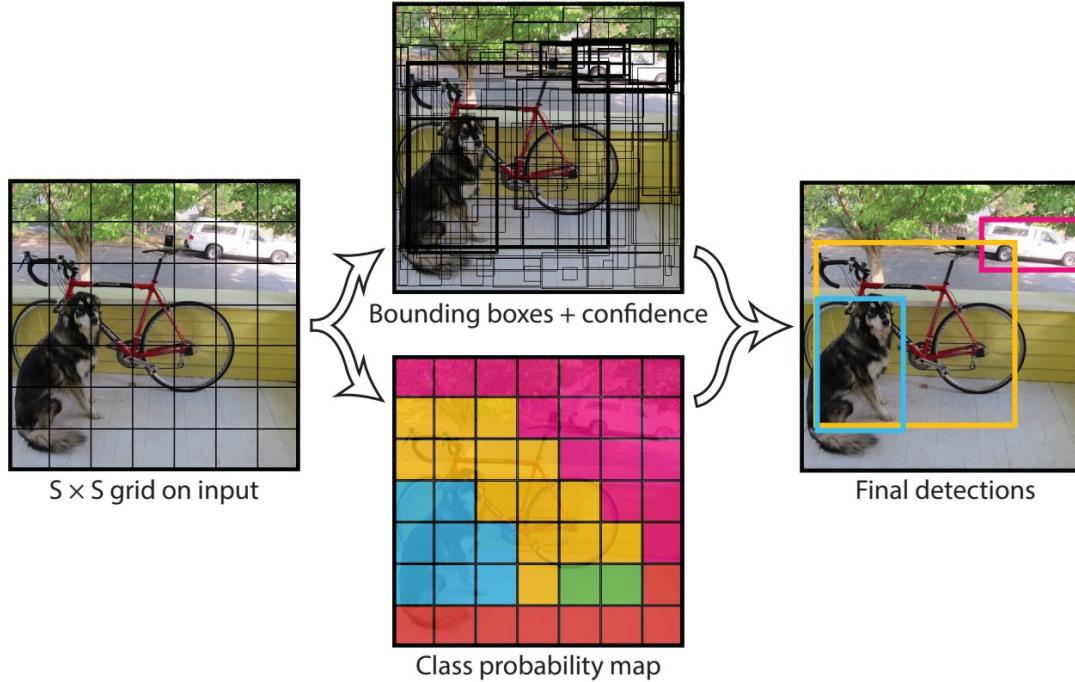
All code: MIT License

All images: CC BY 4.0





: You Only Look Once



J Redmon et al 2016