INSTANSIFY

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Introduction

Instansify is an algorithm which provides a better understanding of an image by instantiating it. The algorithm uses instance algorithm segmentation via which we not only have the bounding box of the object of the but pixel-wise masks for each object as well, enabling us to segment each individual object.

Problem

The main issue we faced is the processing time our model takes to process each image. A small processing time will make our application much more efficient.

Solution

We can reduce processing time by trying different activation functions or by compressing our model Pruning(deleting redundant weights) the our weights and by Quantization which involves bundling weights together by clustering them or rounding them off so that the same number of connections can be represented using lesser amount of memory.

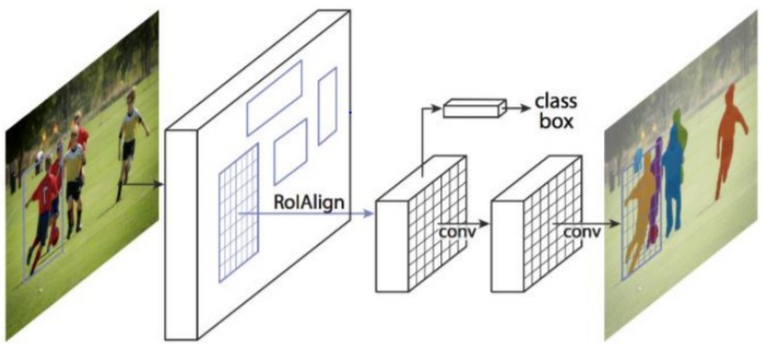

Fig1. Basic working of how the model will target the pixel and construct a Mask over them.

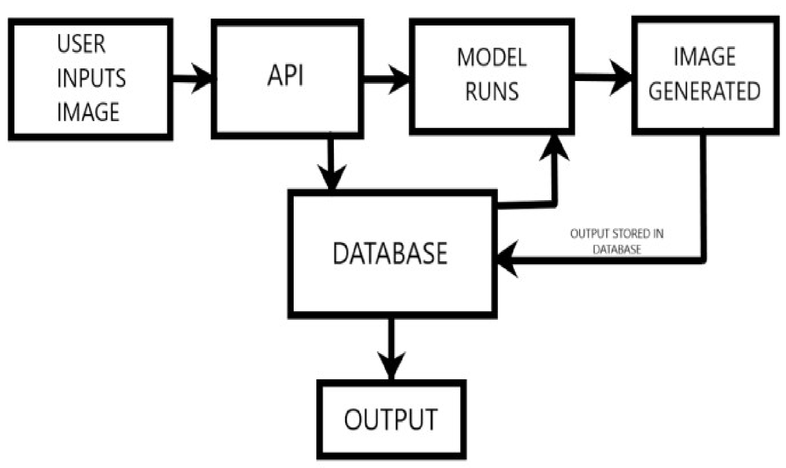

Fig2. Block Diagram

Techniques Utilized

We made the frontend of our project using Pure HTML and CSS.
The Object Detection model which is written in Python and uses Deep Learning Libraries such as TensorFlow, Keras has been connected to the frontend using NodeJs

Demo Snapshots

Fig3 a. Input Image

Fig3 b. Segmented Image

Fig4 a. Input Image

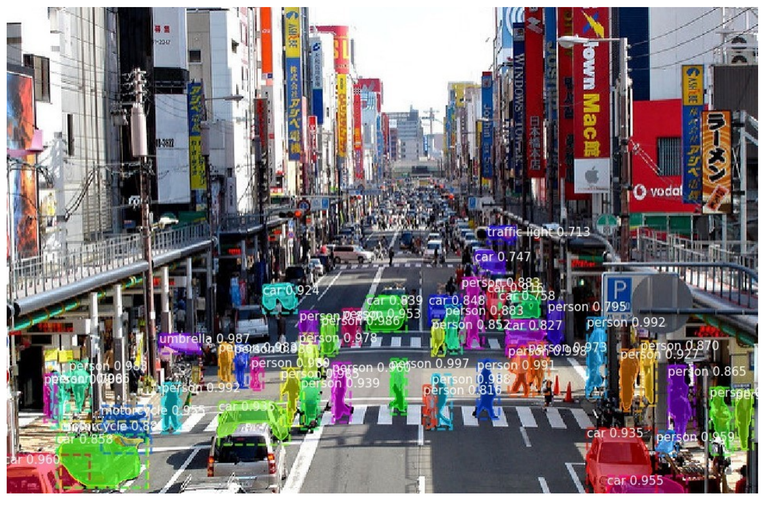

Fig4 b. Segmented Image

Conclusion

As a team, we have come to the conclusion to implement this idea of instantiation only on images until it could really give us some sensible output. If we are able to achieve our objectives, then we can plan to extend this project on video and real time segmentation.

Future Work

As of now Instansify has a broad range of class and hence can be further developed into many more area specific products:
1)3D reconstruction of objects in images
2)Semantic analysis of human emotions using images, etc.