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Real Time and Video Segmentation using Machine Learning

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ABSTRACT: We are always amazed at how the human brain differentiates between different objects and things. This is possible because of our muscle memory. This same thing is possible in computers also. The computer can detect the image and objects and classify them into different classes by using machine learning and computer vision. Machine learning is a branch of artificial intelligence where machines learn by themselves and behave like human behavior. This Image segmentation project uses a machine-learning algorithm named Mask RCNN. This System classifies the image in a particular class and produces a mask on the same pixel area from the image, video, and the live camera also.

KEYWORDS: Mask RCNN, Real Time Segmentation, Video Segmentation

I. INTRODUCTION

Image segmentation is a branch of object detection in computer vision that is done by semi-supervised machine learning. For analyzing the image in detail image segmentation is the most important image processing step. In the image, segmentation is detecting meaningful objects from images. For this various image segmentation algorithms like RCNN, Faster RCNN, Mask RCNN, YOLO, etc. are used. Which divides the image into a particular pixel and detects an object from a different class. In our project, we tried segmentation of pixel to pixel segmentation from an image, video, and real-time instance. Our main focus is on video and real-time instance segmentation by using Mask RCNN.

II. LITERATURE REVIEW

- 1] Aniket Soni explains the visual SLAM algorithm based on multi-objective classification which is used for the representation of semantic information in the field. But it takes lots of time to train and classify.
- 2] Image Segmentation Techniques by Sujata Saini and Komal Arora. In this paper different segmentation techniques were discussed that could use in image segmentation algorithm.
- 3] A Survey by Shervin Minaee, Yuri Boykov, Fatih Porikli, Antonio Plaza which cover modern literature concerning segmentation problem and review more than 100 segmentation algorithm till 2019, grouped into 10 categories..
- 4] Rajeshwar Dass, Priyanka, Swapna Devi explains in their study, reviewed out that the performance assessment and comparison is not easy for the various segmentation techniques or methodologies. They have mentioned the evaluation techniques so that researchers could use while opting any segmentation method.
- 5] There are many systems and algorithms based on the conventional neural network used for image segmentation but the main focus of this system was on image and not on video and real-time segmentation.

III. SYSTEM DESIGN

III.I. BLOCK DIAGRAM

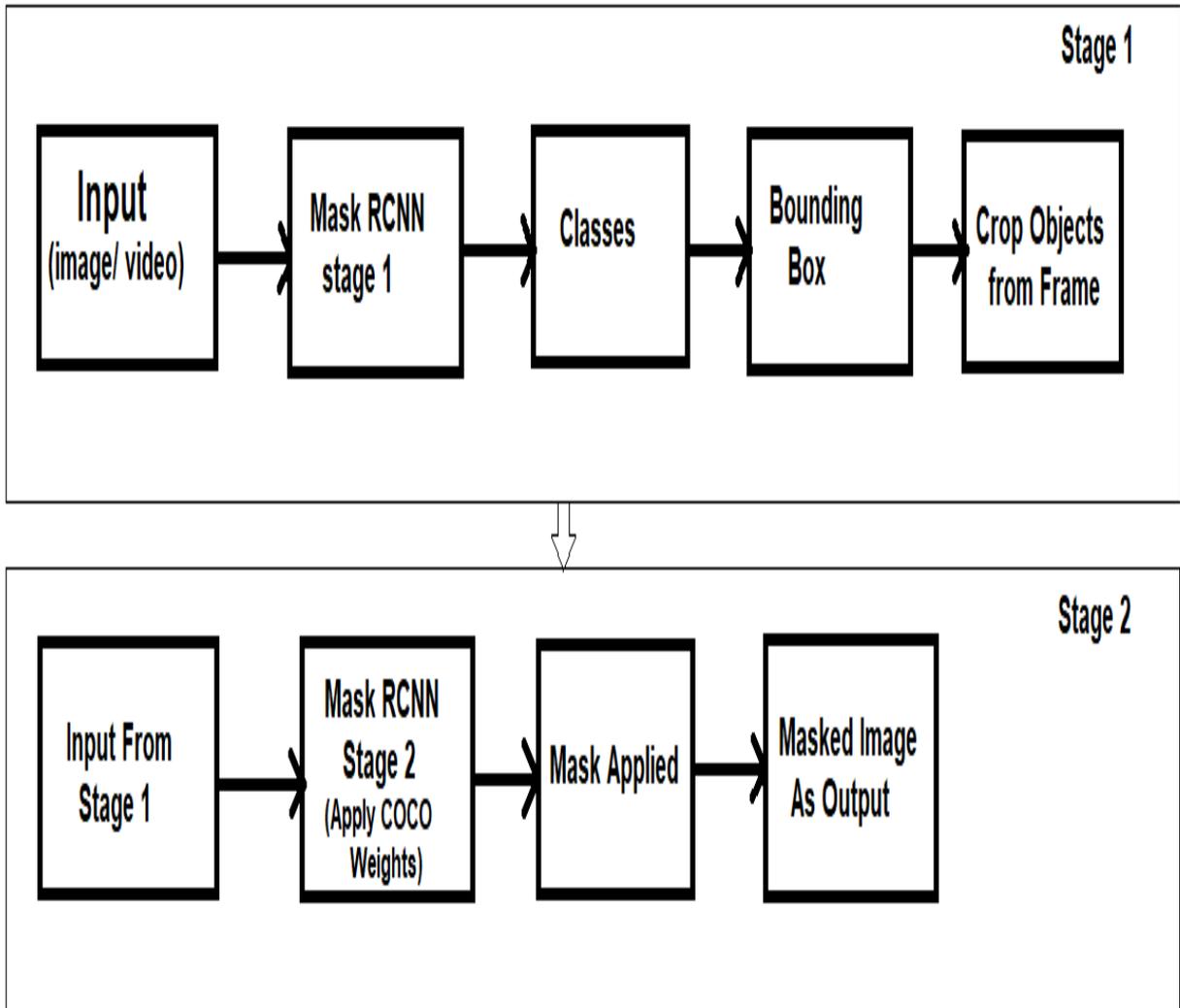


Figure.1.Block Diagram for Realtime and Video Segmentation

III.II. FLOWCHART

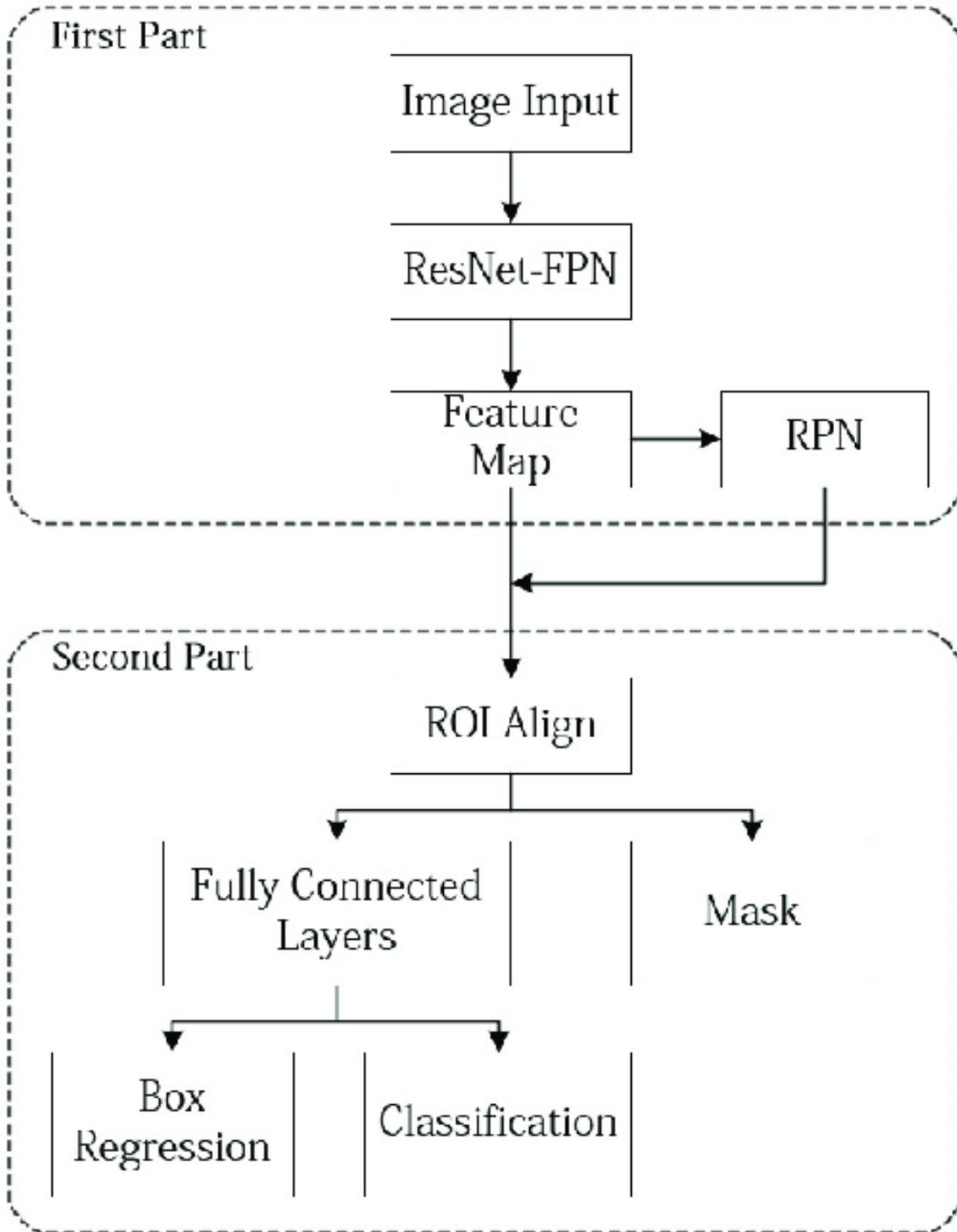


Fig 2. Flow Digram for Realtime and Video Segmentation

III.III. CONCEPT OF THE SYSTEM

the main focus is on real-time Segmentation and Video segmentation is done using a machine learning algorithm called Mask RCNN where the main focus is on the classification of different objects from video and real time capture in a particular class. Also, a classified pixel of objects should generate a mask on a particular object area in a different color.

Software Requirement

- 1) Anacoda
- 2) Jupyter notebook
- 3) Python 3.6

IV. IMPLEMENTATION

IV.I Image Segmentation



Fig.1. Before Segmentation

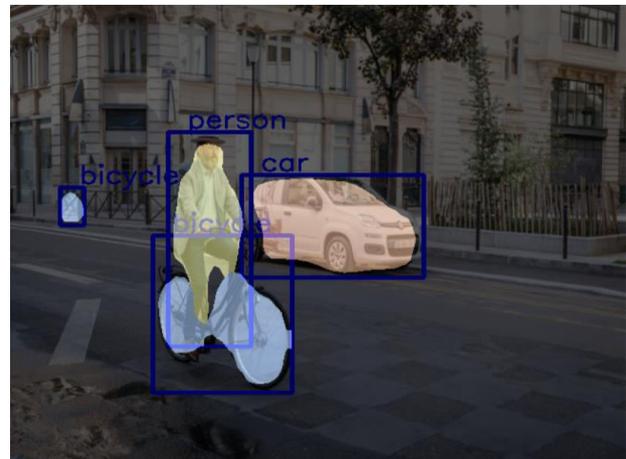


Fig.2. After Segmentation

IV.II Video Segmentation



Fig.3. Before Segmentation

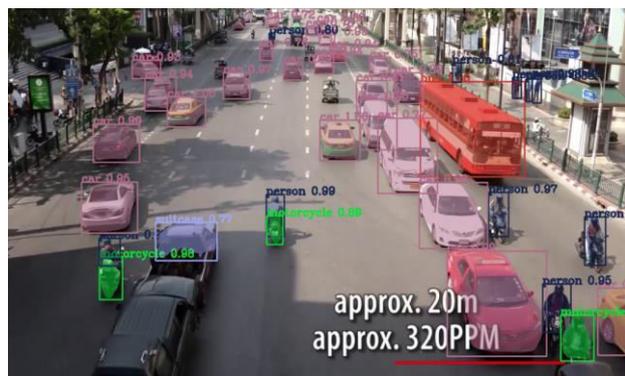


Fig.4. After Segmentation

IV.III Realtime Segmentation

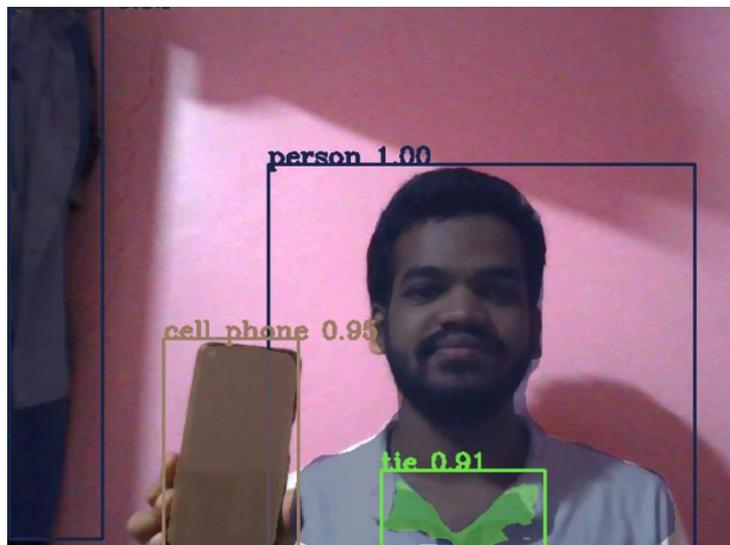


Fig.5. Before Segmentation

V. CONCLUSIONS

We successfully classified objects from video and live cameras. Using the MASK RCNN algorithm, a different colored mask is generated on the object of a different class. This system can also be used in the automobile industry in cars to recognize different kind of objects on the street to avoid accidents.

ACKNOWLEDGMENT

Report is on the topic : ” **Real Time and Video Segmentation using Machine Learning** ” All the Relevant and essential details are included in the paper. At the beginning we have given summarized details of the project which we are building and we have also proceed details about how the project is going to implement and which technologies we are going to use to develop this project.

We are thankful to **Prof. Shashank Tolye** who guided us and helped in preparing the paper. We thank him for providing us the confidence and most importantly giving us the track regarding the project topic whenever we needed it.

REFERENCES

- [1] Image Segmentation Using Simultaneous Localization and Mapping Algorithm by, Ankit Narendrakumar Soni. International Journal of Scientific Research and Engineering Development— Volume 1 Issue 2, NovDec2018 .
- [2] A Study Analysis on the Different Image Segmentation Techniques ,Sujata Saini and Komal Arora.International Journal of Information & Computation Technology. ISSN 0974-2239 Volume 4, Number 14 (2014), pp. 1445- 1452 .
- [3] Image Segmentation Using Deep Learning: A Survey , Shervin Minaee, Yuri Boykov, Fatih Porikli, Antonio Plaza, Nasser Kehtarnavaz, and Demetri Terzopoulos . <https://arxiv.org/abs/2001.05566v1>
- [4] D. Lu & Q. Weng (2007) A survey of image classification methods and techniques for improving classification performance, International Journal of Remote Sensing, 28:5, 823-870, DOI: 10.1080/01431160600746456 .
- [5] Improvement of Mask-RCNN Object Segmentation Algorithm Xin Wu, Shiguang Wen, and Yuan-ai Xie.International Conference on Intelligent Robotics and Applications ICIRA 2019: Intelligent Robotics and Applications pp 582-591.



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