Monument Detection Using YOLO

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***Abstract*—In this Paper we're going to cover the details of our project, Monument detection. The idea of this project is basically to bring an innovative and more realistic approach for the tourism field. What is to be implemented in this project and how it works is as such. As we know that tourism is one of the fields in the economic world that never stops. We always have numerous tourists always visiting the number of monuments and places throughout the world, on adventures, on the the side note most people prefer to be on their own, exploring these varies places. This is where our project starts being useful. Our goal in this is to make an API/Application that is will let these types of tourists and most for all cause to be independent and resourceful while exploring the ends of the world, using the camera device allowed to be operated through this application, we tend to run an algorithm that will find out what monument or historic architecture that is displayed when the camera through the application is pointed at it. The application will also provide insights on what the image for instance the history behind it and all the event that caused it, and all the information that the tourist will require on his adventure.**

Keywords—Data Collection and Pre-processing, Machine Learning Models based, Prediction and Visualization, Real-time Update.

1.INTRODUCTION

As mentioned above, the importance of this idea is to learn and attain what history imparts onto us, to build an understanding and acknowledgment between different cultures and traditions. However, now getting into the technical terms and work. The work here is carried out by an algorithm called YOLO (You Only Look Once). This algorithm has garnered significant attention for its real-time processing capabilities and high accuracy in object detection tasks. This report will elaborate the application of YOLO in the context of Monument Detection which aims to identify images and videos using the camera device.

YOLO (YOU ONLY LOOK ONCE):

What is Yolo? YOLO (You Only Look Once) is a real-time object detection algorithm developed by Joseph Redmon and Ali Farhadi in 2015. It is a single-stage object detector that uses a convolutional neural network (CNN) to predict the bounding boxes and class probabilities of objects in input images. YOLO was first implemented using the Darknet framework.

YOLO has been developed in several versions, such as YOLOv1, YOLOv2, YOLOv3, YOLOv4, YOLOv5, YOLOv6, and YOLOv7. Each version has been built on top of the previous version with enhanced features such as improved accuracy, faster processing, and better handling of small objects.

2. STRUCTURE OF YOLO :

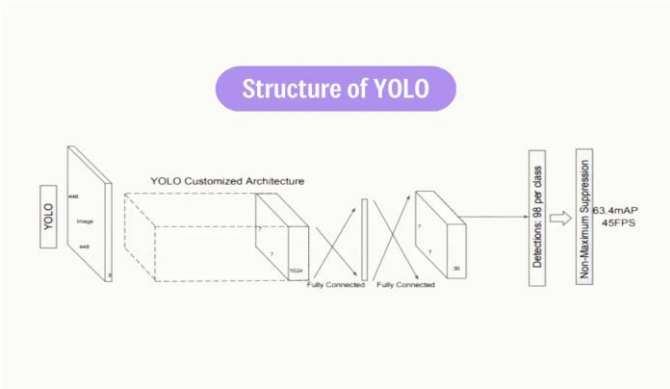

Fig 1.Structure of YOLO.

a) **Working of Yolo: The idea behind the working of YOLO is as such, the algorithm is designed in a manner where it functions by dividing an input image into grid cells, and for each cell it predicts the presence of the object in the input image and bounding box coordinates of the object.**

b) **Steps on the way YOLO works:**

- **Input image is passed through a CNN to extract features from the image.**
- **The features are then passed through a series of fully connected layers, which predict class probabilities and bounding box coordinates.**
- **3The image is divided into a grid of cells, and each cell is responsible for predicting a set of bounding boxes and class probabilities.**

YOLO Algorithms: Fortes

Place any figures or tables you use at the top or bottom of a column. Don't place them in the middle of a column. If particularly wide, a table or figure can span across both

columns. Insert a table or figure after the point where it is first cited in the text.

4. FUTURE SCOPE :

Monument detection encompasses various avenues for enhancing the accuracy, efficiency, and applicability of detection systems. Researchers and developers are focusing on advancing deep learning architectures to bolster accuracy and robustness, especially in challenging scenarios such as occlusions or varied lighting conditions. Integrating semantic understanding and contextual information into detection algorithms is also a priority, aiming to improve

recognition and interpretation capabilities. Additionally, efforts are directed towards multi-modal fusion techniques and transfer learning approaches to enhance performance and scalability. Real-time processing and scalable solutions are being developed to handle large-scale imagery efficiently, with a focus on lightweight architectures for resource-constrained devices. User interaction and interpretability are key areas of interest, with a goal to design intuitive interfaces and improve the explain ability of detection models.

3. CONCLUSIONS

The application provides various features to the users. The main focus of the project is to reduce users/tourists efforts and saves users time and money because India is 7th largest

country which has large no of monuments and Historic places where millions of tourists visits everyday But no one have exact/genuine information about any of the monument and because of that the guides are make them fool ,So we are trying to develop an application which will help the users/tourists to gain the exact information about any of the monument by using their own smart phone camera ,This application (Monument Detection Using YOLO) will work as

a virtual guide for the tourists which will help them to get a proper information related to that monument, so user can save his/her time , money and efforts.

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5. REFERENCES

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