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Android Application for Object Recognition

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ABSTRACT:
This paper is about Object recognition in Android Application. We are developing project to final year computer engineering students. This application will use of mobile camera to take picture and process over object and show much details as it could be able to display it. The people who are always with the questions or the people who are unable to identify the objects around them will be able to know more about the objects without any doubt. They will get a clear view of what the object is and its specifications. This application will have a camera interface in the beginning and then as the user clicks a picture of object it will be given for process.

Keywords: Object Recognition, R-CNN Algorithm, Android, Camera Interface

I. INTRODUCTION

This application has a camera based working as it deals with the image which is captured and it may have the option of directory if the user wants to browse recently clicked picture and access that picture in the application to get his ideas clear.

The features which this application would be holding are:

1) Camera for taking picture.
2) Directory for accessing the recently clicked picture.
3) Details of that picture which was given for the operation.

MODULE INTRODUCTION

I. Object Recognition

In this phase, the complete primary work is to be done. The project actual work will be in this phase because it is the important phase of the program and it will be given lots of attention as it called as the 'Heart of the Project'. The actual skill of the developer is to be implemented in this project so that the outcome of the project will result in effective way and the expectations of the people can be fulfilled in a better manner [1].

II. Camera Interface

The software will be basic camera application which will look like a camera application the front end but when the image will be captured it will be then forwarded for further processing. Processing part consists of recognizing the object or image. This needs as strong User Interface [1].

ALGORITHM USED

Object detection is an important and complex task in computer vision [2]. Object detections is complex because detection requires accurate localization of objects. This creates two challenges:

The first being, that numerous candidate object location (Proposals) must be processed.

The second one is that the rough localization o the proposals must be refined to get a precise localization.

Fast R-CNN is a single stage training algorithm that classifies object proposals and refines their localization.

ARCHITECTURE OF FAST R-CNN

The input of Fast R-CNN is the image and multiple regions of interest (RoI). The network uses several convolution and max pooling layers to produce a feature map of the image[2].

Normally there are about 2000k regions of interest (RoI), which are determined by proposal methods like Selective Search. The pooling layer (RoI pooling) will extract a fixed-length feature vector from the feature map of each region of interest.

Each vector feeds into a sequence of fully connected layers (FCs). This produces two output vectors for each RoI:

I. A vector to estimates the object class is produced by a softmax-function.

II. A four-tuple, which define the RoI. Specifies the top-left corner and is the height and width of the window.

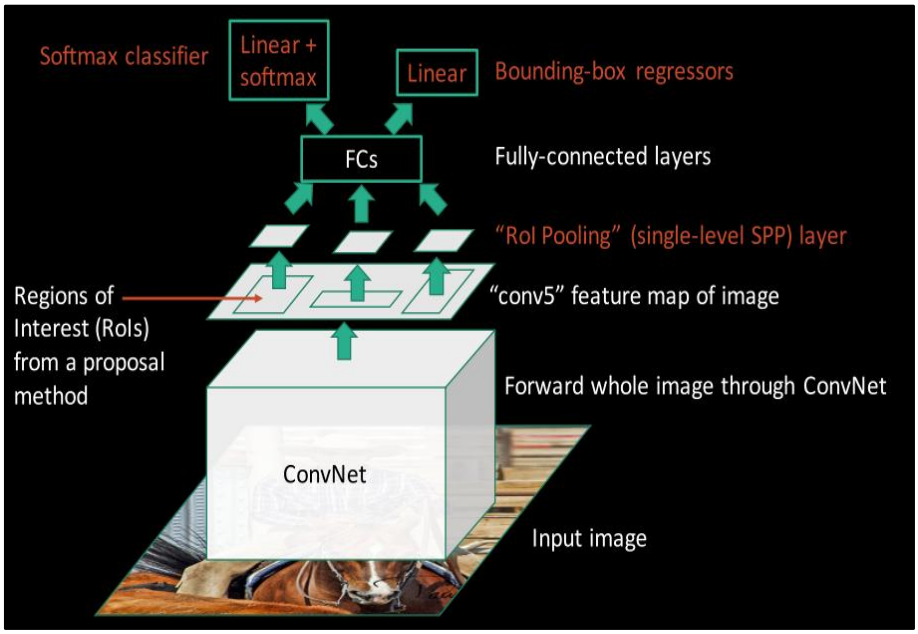

Fig 1: Architecture of Fast R-CNN [5]

ADVANTAGES OF FAST R-CNN

Fast R-CNN overcome many disadvantages of earlier methods and improves in speed and accuracy. This method has several advantages:

I. Higher detection quality (mAP) than R-CNN, SPPnet.
II. Training is single-stage, using a multi-task loss.
III. Training can update all network layers.
IV. No disk storage is required for feature caching.

APPLICATION

I. Remote Sensing.
II. Image and Data storage for transmission in Business Application.
III. Medical Imaging.
IV. Industrial Automation.

FLOW DIAGRAM

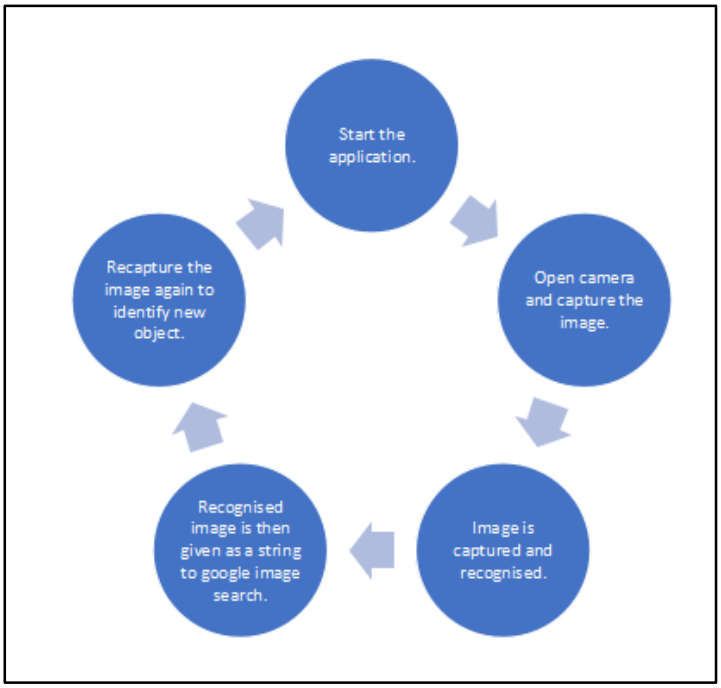

Fig 2: Work Flow Mechanism

II. CONCLUSIONS

With the help of this project, a particular individual can identify the object or things which user is unaware about. The identification can help people to explore knowledge so that they can learn many things out of it. We believe this project will definitely bring a smile on user's face.

III. REFERENCES

[1] Roman Osorio, N. Bustos, "Object recognition using App Android", IEEE INSPEC Accession Number: 15799318, 10.1109/Chilecon.2015.7400343, 2016.
[2] R. Fisher, KDawson-Howe, A Fitzgibbon, C. Roberston, E Turcco, "Dictionary of Computer Vision and Image Processing", John Wiley, 2005.
[3] Gonzalez, Rafael, "Digital Image Processing", Pearson Hall Third Edition, 2008.
[4] https://wiki.tum.de/pages/viewpage.action?pageId=22578448