OBJECT DETECTION USING AI

A PROJECT REPORT

Submitted by

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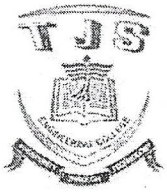
In partial fulfilment for the award of the degree

Of

BACHELOR OF ENGINEERING

In

COMPUTER SCIENCE AND ENGINEERING



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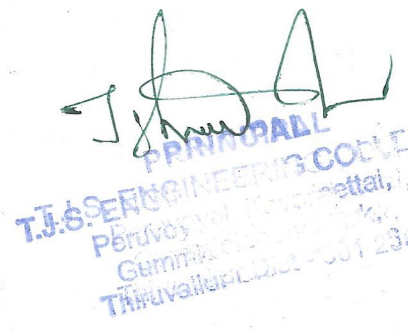

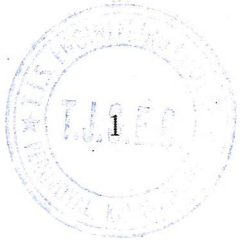

ANNA UNIVERSITY: CHENNAI 600 025

Certificate that this project report "OBJECT DETECTION USING AI" is the bonafide work of the following students.

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INTERNAL EXAMINER

18/6/22

EXTERNAL EXAMINER

ABSTRACT

There is an ever-increasing amount of image data in the world, and the rate of growth itself is increasing. Infotrends estimates that in 2016 still cameras and mobile devices captured more than 1.1 trillion images. According to the same estimate, in 2020 the figure will increase to 1.4 trillion. Many of these images are stored in cloud services or published on the Internet. In 2014, over 1.8 billion images were uploaded daily to the most popular platforms, such as Instagram and Facebook.

Going beyond consumer devices, there are cameras all over the world that capture images for automation purposes. Cars monitor the road, and traffic cameras monitor the same cars. Robots need to understand a visual scene in order to smartly build devices and sort waste. Imaging devices are used by engineers, doctors and space explorers alike.

To effectively manage all this data, we need to have some idea about its contents. Automated processing of image contents is useful for a wide variety of image-related tasks. For computer systems, this means crossing the so-called semantic gap between the pixel level information stored in the image files and the human understanding of the same images. Computer vision attempts to bridge this cap.

Objects contained in image files can be located and identified automatically. This is called object detection and is one of the basic problems of computer vision. As we will demonstrate, convolutional neural networks are currently the state-of-the-art solution for object detection. The main task of this thesis is to review and test convolutional object detection methods.

In the theoretical part, we review the relevant literature and study how convolutional object detection methods have improved in the past few years. In the experimental part, we study how easily a convolutional object detection system can be implemented in practice, test how well a detection system trained on general image data performs in a

- Structure simple Python programs for solving problems.
- Decompose a Python program into functions.
- Represent compound data using Python lists, tuples, dictionaries.
- Read and write data from/to files in Python Programs.

TEXT BOOKS:

3. Allen B. Downey, ``Think Python: How to Think Like a Computer Scientist", 2nd edition, Updated for Python 3, Shroff/O'Reilly Publishers, 2016
4. Guido van Rossum and Fred L. Drake Jr, ¯An Introduction to Python - Revised andupdated for Python 3.2, Network Theory Ltd., 2011.

CS8691 ARTIFICIAL INTELLIGENCE

L T P C
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OBJECTIVES:

- To understand the various characteristics of Intelligent agents
- To learn the different search strategies in AI
- To learn to represent knowledge in solving AI problems
- To understand the different ways of designing software agents
- To know about the various applications of AI.

UNIT I INTRODUCTION 9

Introduction-Definition - Future of Artificial Intelligence - Characteristics of Intelligent Agents-Typical Intelligent Agents - Problem Solving Approach to Typical AI problems.

UNIT II PROBLEM SOLVING METHODS 9

Problem solving Methods - Search Strategies- Uninformed - Informed - Heuristics - Local Search Algorithms and Optimization Problems - Searching with Partial Observations - Constraint Satisfaction Problems - Constraint Propagation - Backtracking Search - Game Playing - Optimal Decisions in Games - Alpha - Beta Pruning - Stochastic Games

UNIT III KNOWLEDGE REPRESENTATION 9

First Order Predicate Logic - Prolog Programming - Unification - Forward Chaining-Backward Chaining - Resolution - Knowledge Representation - Ontological Engineering-Categories and Objects - Events - Mental Events and Mental Objects - Reasoning Systems for Categories - Reasoning with Default Information

UNIT IV SOFTWARE AGENTS 9

Architecture for Intelligent Agents - Agent communication - Negotiation and Bargaining - Argumentation among Agents - Trust and Reputation in Multi-agent systems.

UNIT V APPLICATIONS 9

AI applications - Language Models - Information Retrieval- Information Extraction - Natural Language Processing - Machine Translation - Speech Recognition - Robot - Hardware - Perception - Planning - Moving

TOTAL :45

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