

MES COLLEGE OF ENGINEERING-KUTTIPPURAM  
DEPARTMENT OF COMPUTER APPLICATIONS  
20MCA246 - MAIN PROJECT

**PRO FORMA FOR THE APPROVAL OF THE FINAL SEMESTER PROJECT**

(Note: All entries of the pro forma of approval should be filled up with appropriate and complete information. Incomplete Pro forma of approval in any respect will be rejected.)

Project Proposal Number : \_\_\_\_\_  
(Filled by the Department)

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Academic Year : 2023

Year of Admission : 2021

Roll Number

22

Register Number

MES21MCA-2022

1. Name of the Student (in BLOCK LETTERS)

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2. Name of the Organization

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3. Address of the Organization

Telephone No. : \_\_\_\_\_

Company Email : \_\_\_\_\_

4. Name of the External Guide

: \_\_\_\_\_

Mobile No. : \_\_\_\_\_

E-Mail : \_\_\_\_\_

1. Title of the Project : ATTENTION MECHANISM-BASED CROWD COUNTING WITH CNN

2. Name of the Guide : Mr. Balachandran KP

Date : 10/02/2023

Signature of the Student:



**Comments of The Project Guide**

Initial Submission :

Approval Status :

Approved / Not Approved

Dated Signature of Guide

HOD

First Review :

Second Review :

**Comments of The Project Coordinator**

Initial Submission: Approved

First Review

Second Review  
Coordinator

Dated Signature of Project  
Coordinator



# ATTENTION MECHANISM-BASED CROWD COUNTING WITH CNN

MOHAMED NIHAL

MES21MCA-2022

## ABSTRACT

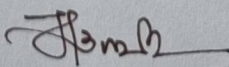
The project is about understanding the possibilities of counting the crowd using the mechanism of Convolutional Neural Networks (CNN) and Attentional Mechanism. The method is on picking up real-time live-streaming video or images from an environment within a crowd and it evaluates the movements happening in that frame with Attention Mechanism and evaluates the method by CNN. Crowd counting is a technique to estimate the number of people in an image or a video stream. Visual counting or tallying is an open set problem, i.e., the number of people that can be present while estimating can range from  $[0, +\infty)$ .

Among all the related concrete tasks of crowd analysis, crowd counting is a fundamental pillar, aiming to estimate the number of individuals in a crowd. However, simply giving a single number is far from being able to support the practical demands of the subsequent higher-level crowd analysis tasks, such as crowd tracking, activity recognition, abnormality detection, flow/behavior prediction, etc.

People in images or across real-time visual scenes usually exhibit various distributions, with some regions overcrowded and other regions sparsely filled. Two main factors lead to this phenomenon, people scatter or gather together spontaneously in different regions of the scenes. On the other hand, people's scale varies due to the change in camera perspective. Accordingly, the people distributions in density maps present different patterns. Computer vision technology for crowd counting plays an important role in safety management, video surveillance, and urban planning. Due to the severe occlusion, scale variation, and high density in the crowd scene, crowd counting is still a challenging task.

The project comprised a mobile app by processing the live-streaming video and by capturing the movements of people in each timeframe. The human heads are encoded from the images or videos captured by the massive crowd. The encoded images are marked by the colors and then colors are counted with accuracy. The capturing of images is done by the attention mechanism in which it picks the objects or headcount, the method carried over the attention mechanism is splitting of the images or videos after further fusing up after extracting the content in that image.

After the implementation of the app, it would be easier to fetch or capture the count of the crowd. As it would fetch the count of people present in riots or some outbreaks of violence happening in the society and public, which can directly forward to the police or other officials to take necessary actions.

  
Balasubramanian K P  
Proj. Guide