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

PRO FORMA FOR THE APPROVAL OF THE FOURTH SEMESTER MAIN PROJECT

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

Main Project Proposal No : 1 *(Filled by the Department)*	Academic Year : 2021- 22 Year of Admission : 2020

1. Title of the Project : VOICE ASSISTANT FLUTTER RADIO APP
2. Name of the Guide : DR. GEEVAR C ZACHARIAS
3. Student Details (in BLOCK LETTERS)

Name	Register Number	Signature
AKSHAYKUMAR M R	MES20MCA-2003	

Date:

Approval Status : Approved / Not Approved

Signature of Committee Members

Comments of the Guide Dated Signature

Initial Submission :

First Review :

Second Review :

Comments of the Project Coordinator Dated Signature

Initial Submission:

First Review

Second Review

Final Comments :

Dated Signature of HOD

VOICE ASSISTANT FLUTTER RADIO APP

AKSHAYKUMAR M R

Introduction:

Building FM radio app using AI assistant ALAN. This is an Alan AI powered voice assistant radio app which can be used to play some music and also make some voice chat with Alan. This project, We show you how we can integrate Alan AI incredibly easily into a RADIO app.we have to use Flutter (dart language) for app development and integrate it with AI using ALAN.This project is an Radio application based on the AI Technology. This Radio can recognize your voice and reply to it also.

Objectives:

Voice integration is the future. It enables applications to be accessible to everyone and is very mobile friendly. In this customer-centric era, user experience has become one of the topmost priority for customer based applications. That's why developers are also focusing more on user interactions to make it as smooth as possible. When it comes to UX, AI(Artificial Intelligence) has always been a good performer. Developers nowadays are using AI to enhance the UX of their applications. Voice-controlled interaction is one of them. Alan AI is a complete voice AI platform that lets you embed a contextual voice assistant.Alan is a conversational voice AI platform that lets you create an intelligent voice assistant for your app. It offers all necessary tools to design, embed and host your voice solutions. A powerful web-based IDE where you can write, test and debug dialog scenarios for your voice assistant or chatbot. Alan's lightweight SDKs to quickly embed a voice assistant to your app. Alan's AI-backend powered by the industry's best Automatic Speech Recognition (ASR), Natural Language Understanding (NLU) and Speech Synthesis. The Alan Cloud provisions and handles the infrastructure required to maintain your voice deployments and perform all the voice processing tasks.

Problem Definition: just a simple 'HEY ALAN' would wake up the voice assistant. I have used ALAN to bring the voice controlled AI features inside the application,audio players plugin to play the radios and VelocityX for the seamless UI. I used Flutter SDK, Alan SDK and Android SDK with Dart as preferred language. whenever some data or command is sent from the alan server as a JSON object to client-side flutter code. It becomes handy when you try to do something in your flutter app as a response to your command.
it is just an easy example of the implementation of a voice assistant in a flutter application.

Basic functionalities: Radio, Voice Assistant

Tools / Platform, Hardware and Software Requirements:

Hardware specification:

- Processor : Intel Pentium Core i3 and above
- Primary Memory : 4 GB RAM and above
- Storage : 500 GB hard disk and above
- Display : VGA Colour Monitor
- Key Board : Windows compatible
- Mouse : Windows compatible

Software specification:

- Language: Dart
- Framework: Flutter
- Operating system : windows 7 and above
- IDE : Visual Studio Code
- Others : JS,ALAN STUDIO

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

PRO FORMA FOR THE APPROVAL OF THE FOURTH SEMESTER MAIN PROJECT

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

Main Project Proposal No : 2 *(Filled by the Department)*	Academic Year : 2021- 22 Year of Admission : 2020

1. Title of the Project : AUTOMATIC DETECTOR FOR BIKERS WITH NO HELMET USING DEEP LEARNING
2. Name of the Guide : DR. GEEVAR C ZACHARIAS
3. Student Details (in BLOCK LETTERS)

Name	Register Number	Signature
AKSHAYKUMAR M R	MES20MCA-2003	

Date:

Approval Status : Approved / Not Approved

Signature of Committee Members

Comments of the Guide Dated Signature

Initial Submission :

First Review :

Second Review :

Comments of the Project Coordinator Dated Signature

Initial Submission:

First Review

Second Review

Final Comments :

Dated Signature of HOD

AUTOMATIC DETECTOR FOR BIKERS WITH NO HELMET USING DEEP LEARNING

AKSHAYKUMAR M R

Introduction: This method is the state-of-the-art that is able to use only one single CNN network to detect the bounding box area of motorcycle and rider and then classify that biker is wearing or not wearing a helmet at the same time. The results of the experiment were surprisingly good. The classification accuracy of bikers not wearing a helmet was extremely high and the detection of the ROI of biker and motorcycle in the image can be done at the same time as the classification process.

Objectives: The success of digital image pattern recognition and feature extraction using a convolutional Neural Network (CNN) or Deep Learning was recently acknowledged over the years. Researchers have applied these techniques to many problems including traffic offense detection in video surveillance, especially for the motorcycle riders who are not wearing a helmet. Several models of CNN were used to solve these kinds of problem but mostly required the image pre-processing step for extracting the Region of Interest (ROI) area in the image before applying CNN to classify helmet. In this paper, we proposed to apply another interesting method of deep learning called Single Shot Multi Box Detector (SSD) into helmet detection problem.

Problem Definition: The importance of automatic system in traffic control has been increased in the recent year. One goal is to improve the utilization of a traffic flow system, others are to reduce the cost of human labour and decrease the causes of an accident. In Thailand, one major reason for the accident is the motorcycle biker who drives without wearing a helmet . According to the law, every motorcyclist needs to wear a helmet while riding the motorcycle. But many bikers ignored and use their vehicle without safety equipment. The policeman tried to control this problem manually but it is insufficient for the real situation. The ideal solution is to develop an electronic detection system that can be automated recognize this kind of problem without human cost. Building an automatic system like this bring researchers into areas of Image Processing (IP), Computer Vision (CV), and Artificial Intelligence (AI). Because most data from the traffic control system usually came in a format of video surveillance data (image and video) that require the technique to analyze an image data such as image recognition, pattern matching, and image segmentation. To detect the bikers who don't wear a helmet, we need methods to detect the photo of motorcycle and driver from the image and then detect an area of the biker head before classify that this person is wearing a helmet or not. Several IP and AI approaches have been using to solve this problem, for example, Fourier transformation , Support Vector Machine (SVM) , Histogram of Oriented Gradients (HOG) , Artificial Neural Network etc. But the advancement in another technique called a Convolutional Neural Network (CNN) has proved to be the better method in the area of image recognition and computer vision. One historical method is "AlexNet" developed in 2010 . The model of Alexnet is a Deep Layer Convolutional Neural Network consisted of 650,000 neurons and 60 million parameters with five convolutional layers and 1000-way softmax layer. This model was challenged in the ImageNet Large-Scale Visual Recognition Challenge 2010 (ILSVRC10) and won the competition proved that CNN method will likely be the best technique to solve the most image recognition problem in this era. After the success of AlexNet, several CNN models have been introduced and tried to achieve better performance than the pioneer one. For example, VGG , GoogLeNet or Inception , and MobileNets . But most of these models can use only to categorize or recognize one object from the image not for multiple

objects. Another technique needs to include into these models for adding image segmentation feature by drawing the box on the area of a possible object in an image before categorization. This combination help CNN model to be able to detect multiple objects in one single frame of the image. The examples of this approach are Faster R-CNN , Single Shot Multi-Box Detector (SSD) , and YOLO . Our previous work had applied the combination of the SSD method and the image classification model such as GoogleNet and MobilesNet on the Thai License Plate Recognition problem and received a good result on that problem. The accuracy of detection and classification of a Thai character on the Thai License Plate was more than 90% for both models (GoogLeNet and MobileNets) . It gave us the confidence to take a further step to apply this technique in a helmet detection and classification issue. In this paper, we proposed to solve the biker and helmet detection problem from video surveillance data by using CNN models and the SSD method. Some of CNN models have used in this experiment (VGG, GoogLeNet, and MobileNets) to compare the result. From our initial experiment, we found that the combination of MobileNets model and SSD has achieved the best accuracy compared to GoogLeNet and VGG in helmet detection problem and MobileNets was the method which requires the smallest size of the overall network.

Basic functionalities: Image Abstraction, Face reach abstraction, Head Localization, Helmet Detection, Output Generation.

Tools / Platform, Hardware and Software Requirements:

Hardware specification:

- Processor : Intel Pentium Core i3 and above
- Primary Memory : 4 GB RAM and above
- Storage : 500 GB hard disk and above
- Display : VGA Colour Monitor
- Key Board : Windows compatible
- Mouse : Windows compatible

Software specification:

- Front end : Python
- Back end : MYSQL
- Operating system : windows 7 and above
- IDE : Visual Studio Code, PyCharm
- Others : HTML,CSS

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

PRO FORMA FOR THE APPROVAL OF THE FOURTH SEMESTER MAIN PROJECT

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

Main Project Proposal No : 3 *(Filled by the Department)*	Academic Year : 2021- 22 Year of Admission : 2020

1. Title of the Project : MISSING CHILD IDENTIFICATION SYSTEM USING DEEP LEARNING AND MULTICLASS SVM
2. Name of the Guide : DR. GEEVAR C ZACHARIAS
3. Student Details (in BLOCK LETTERS)

Name	Register Number	Signature
AKSHAYKUMAR .M. R	MES20MCA-2003	

Date:

Approval Status : Approved / Not Approved

Signature of Committee Members

Comments of the Guide Dated Signature

Initial Submission :

First Review :

Second Review :

Comments of the Project Coordinator Dated Signature

Initial Submission:

First Review

Second Review

Final Comments :

Dated Signature of HOD

MISSING CHILD IDENTIFICATION SYSTEM USING DEEP LEARNING AND MULTICLASS SVM

AKSHAYKUMAR M R

Introduction: In India a countless number of children are reported missing every year. Among the missing child cases a large percentage of children remain untraced. This paper presents a novel use of deep learning methodology for identifying the reported missing child from the photos of multitude of children available, with the help of face recognition. The public can upload photographs of suspicious child into a common portal with landmarks and remarks. The photo will be automatically compared with the registered photos of the missing child from the repository. Classification of the input child image is performed and photo with best match will be selected from the database of missing children.

Objectives: For this, a deep learning model is trained to correctly identify the missing child from the missing child image database provided, using the facial image uploaded by the public. The Convolutional Neural Network (CNN), a highly effective deep learning technique for image based applications is adopted here for face recognition. Face descriptors are extracted from the images using a pre-trained CNN model VGG-Face deep architecture. Compared with normal deep learning applications, our algorithm uses convolution network only as a high level feature extractor and the child recognition is done by the trained SVM classifier. Choosing the best performing CNN model for face recognition, VGG-Face and proper training of it results in a deep learning model invariant to noise, illumination, contrast, occlusion, image pose and age of the child and it outperforms earlier methods in face recognition based missing child identification. The classification performance achieved for child identification system is 99.41%. It was evaluated on 43 Child cases.

Problem Definition: Children are the greatest asset of each nation. The future of any country depends upon the right upbringing of its children. India is the second populous country in the world and children represent a significant percentage of total population. But unfortunately a large number of children go missing every year in India due to various reasons including abduction or kidnapping, run-away children, trafficked children and lost children. A deeply disturbing fact about India's missing children is that while on an average 174 children go missing every day, half of them remain untraced. Children who go missing may be exploited and abused for various purposes. As per the National Crime Records Bureau (NCRB) report which was cited by the Ministry of Home Affairs (MHA) in the Parliament (LS Q no. 3928, 20-03- 2018), more than one lakh children (1,11,569 in actual numbers) were reported to have gone missing till 2016, and 55,625 of them remained untraced till the end of the year. Many NGOs claim that estimates of missing children are much higher than reported. Mostly missing child cases are reported to the police. The child missing from one region may be found in another region or another state, for various reasons. So even if a child is found, it is difficult to identify him/her from the reported missing cases. A framework and methodology for developing an assistive tool for tracing missing child is described in this paper. An idea for maintaining a virtual space is proposed, such that the recent photographs of children given by parents at the time of reporting missing cases is saved in a repository. The public is given provision to voluntarily take photographs of children in suspected situations and uploaded in that portal. Automatic searching of this photo among the missing child case images will be provided in the application. This supports the police officials to locate the child anywhere in India. When a child is found, the photograph at that time is matched against the images

uploaded by the Police/guardian at the time of missing. Sometimes the child has been missing for a long time. This age gap reflects in the images since aging affects the shape of the face and texture of the skin. The feature discriminator invariant to aging effects has to be derived. This is the challenge in missing child identification compared to the other face recognition systems. Also facial appearance of child can vary due to changes in pose, orientation, illumination, occlusions, noise in background etc. The image taken by public may not be of good quality, as some of them may be captured from a distance without the knowledge of the child. A deep learning [1] architecture considering all these constrain is designed here. The proposed system is comparatively an easy, inexpensive and reliable method compared to other biometrics like finger print and iris recognition systems.

Basic functionalities: Image Collection, Face Detection, Face Comparison, Match Detection, Output Generation.

Tools / Platform, Hardware and Software Requirements:

Hardware specification:

- Processor : Intel Pentium Core i3 and above
- Primary Memory : 4 GB RAM and above
- Storage : 500 GB hard disk and above
- Display : VGA Colour Monitor
- Key Board : Windows compatible
- Mouse : Windows compatible

Software specification:

- Front end : Python
- Back end : MYSQL
- Operating system : windows 7 and above
- IDE : Visual Studio Code, PyCharm
- Others : HTML,CSS