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Artificial Intelligence (CSC-xxx)	Instructor:	Dr. Iftikhar Hussain
Final Term (Spring 2021)	Max Marks:	**40**
Date: July 05, 2021 (Monday)		

Practical

Complete any two tasks from the following; each task (viva based) carries equal marks.

[20+20] marks

Task 1: Road Lane Detection Module

Autonomous Driving Car is one of the most disruptive innovations in AI. Fuelled by Deep Learning algorithms, they are continuously driving our society forward and creating new opportunities in the mobility sector. An autonomous car can go anywhere a traditional car can go and does everything that an experienced human driver does. But it's very essential to train it properly. One of the many steps involved during the training of an autonomous driving car is lane detection, which is the preliminary step.

Implement a real time road lane detection module in python using *openCV*. To evaluate, the image and video is also shared with this task.

Task 2: Classification – Hand Written Digits

Classification is a process of categorizing a given set of data into classes. The process starts with predicting the class of given data points where the classes can be referred to as target, label, or categories.

Implement a module to classify hand-written digits on *MNIST* dataset. The *MNIST* (Modified National Institute of Standards and Technology) is a well-known dataset used in Computer Vision. It is composed of images that are handwritten digits (0-9), split into a training set of 50,000 images and a test set of 10,000 where each image is of 28 x 28 pixels in width and height. MNIST comes with *Keras* by default and you can simply load the train and test files. Create a basic Fully Connected Neural Network for the dataset using *tensorflow* to: flatten the input image dimensions to 1D, Normalize the image pixel values, build model architecture, train the model and make predictions.

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Task 3: <u>Predict ratings of the Medical reviews</u> (Classification model)

<u>Dataset</u>

This task requires you to implement text mining on the ***MedReviews.csv*** dataset. The dataset contained in ***MedReviews.csv*** refers to 23,305 medicine reviews and the corresponding ratings. Ratings given by customers can be either *High* or *Low*.

All variables in this dataset are self-explanatory.

<u>Task</u>

Create classification models in Python that can predict ratings of medicine reviews. You can create model by using either Support Vector Classifier or Naïve Bayes Classifier, and also use similar to predict ratings of reviews given in the ***NoRatings.csv*** dataset.

In addition to providing the python code file, you are required to provide a pdf report containing interpretation of performance of the classifier during model selection and in predicting ratings of medicines in *NoRatings.csv*.

Submission Instructions:

- A (single) document shall be submitted at Google-Classroom
    - Must be in .pdf /.docx (don not upload the zip/rar)
    - Having your name and ID at first page
    - Each task (response) must be in sequence
    - The document (pdf/docx) encloses the python code and the output screenshot
    - Upload the python files separately
- Submit within specified time period
- Plagiarism is strictly forbidden

<u>Best of Luck</u>

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