Course Project: ML System Design & Implementation

Design and implement your own system that utilizes a machine learning model to perform a specific task. You have the freedom to choose any related topic that can benefit from machine learning. However, you must email the instructor with the proposed idea and get approval before you start. You have the choice to use any machine learning platform of preference.

The system should include the following:

1. The system must contain a machine learning model that you train and integrate with the system
   o You can use any publicly available datasets to build your model
   o Experiment with different machine learning algorithms and parameters in order to get the best performing model for your task
   o Include the evaluation results of the different models you experimented with in your report
2. A GUI for the system to integrate all the components of the system and facilitate the functionality demonstration of your system (mobile application, desktop application, or a web interface)

Proposed topic Submission Information:

You must <u>email</u> the instructor with the proposed idea along with the chosen dataset in order to get approval before you start by <u>15 Mar 2021 (5 pm)</u>.

Project Submission Information:

Submit the following deliverables in the LMS (Blackboard) by <u>15 April 2021 (5 pm)</u>:

1. A <u>PDF report</u> that describes all the steps you took to design and implement your system along with the following information:
   - The platform you used to implement your system
   - All the steps you took in order design and implement your system
   - Description of your ML models including all the used hyperparameters
   - Description of all data preprocessing you applied to the chosen dataset
   - Evaluation results of your model methodology and report the following results:
     - For classification problems
       - Accuracy
       - F1 Score
       - Area under the ROC Curve (AUC) (if applicable)
       - Confusion Matrix
     - For regression problems
       - Mean Absolute Error (MAE)
       - Root Mean Square Error (RMSE)
       - R^2 (if applicable)
   - Screenshots of the following:
     - Source code
     - Evaluation results of your model
     - Demo of the GUI before & after prediction
2. A <u>compressed file</u> containing all the source code of your system (In a zip format)