



# University of New Haven

## **Deep Learning -DSCI-6011-03**

### Team Members

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## Project\_1: Gym Equipment Classification

### Abstract:

This project focuses on building a deep learning-based image classification model to identify different types of gym equipment using images. Gym equipment classification can be useful in fitness-related applications, inventory management systems, and automated equipment recognition in smart gyms. The dataset consists of images of five categories of gym equipment, including dumbbells, kettlebells, pull-up bars, bench presses, and treadmills.

### Dataset Description:

The dataset used in this project consists of a collection of images of various gym equipment, such as Dumbbell, kettlebell, pull bar, bench-press, treadmill. Each image is labeled with its corresponding category, which is used to train a classification model. The dataset is likely divided into training and testing sets, where the training set is used to train the model, and the testing set is used to evaluate its performance.

### Sample Input:



**Sample Output:**

**Treadmill**



**Dumbbell**



## Project:2

**1. Project name:** Deep Learning Model for Automatic Number/License Plate Detection and Recognition System in Campus Gates.

**2. Paper link:** <https://ieeexplore.ieee.org/document/10131758>

**Sample Code link:**

<https://github.com/Asikpalysik/Automatic-License-Plate-Detection/tree/main>

**3. Project Description:** The project aims to develop an Automatic Number Plate Recognition (ANPR) system using deep learning techniques. The system will take JPEG images of cars as input and will be trained using a dataset consisting of images with annotated bounding boxes around the license plates in XML format. The approach involves using a convolutional neural network (CNN) to detect and recognize the license plate, producing outputs that include the coordinates of the bounding boxes for the detected license plates in the given images. This enables accurate localization and recognition of license plate numbers from vehicles.

**4. Dataset Description and Format:** The dataset used for this project is not explicitly mentioned in the provided Kaggle link. However, based on the code, it appears that the dataset consists of images of vehicles with annotated license plates. The dataset format is likely a collection of image files (e.g., JPEG or PNG) with corresponding annotation files (e.g., XML or CSV) containing the license plate information.

### **5. Data Source:**

The data source for this project consists of images of cars taken from a campus environment, captured from various angles to ensure diverse viewpoints of license plates. These images include both front and rear views of vehicles, making the dataset comprehensive for detecting and recognizing license plates under different conditions. Each image captures a vehicle along with its license plate, providing the necessary visual data to train and test the automatic number plate recognition (ANPR) system.

### **6. Annotation Tools:**

We use either CVAT (Computer Vision Annotation Tool) or LabelImg for annotating our dataset. With CVAT, we upload JPEG images, draw bounding boxes around the license plates, and export the annotations in XML format. Alternatively, LabelImg allows us to manually annotate JPEG images on our local machine and save the annotations in XML format as well. Both tools help prepare our images for training the automatic number plate recognition (ANPR) system.

**7. Sample input:**





**8. Sample output:**

