**Use Cases for AI-ML**

### 1. ****Human Activity Recognition using Smartphone Dataset****

This is one of the trending machine learning project ideas. The smartphone dataset includes the fitness activity record and information of 30 people. This data was captured through a smartphone equipped with inertial sensors. This ML project aims to build a classification model that can identify human fitness activities with a high degree of accuracy. By working on this ML project, you will learn the basics of classification and also how to solve multi-classification problems.

### 2. ****Object Detection with Deep Learning****

This is one of the interesting machine learning projects to create. When it comes to image classification, Deep Neural Networks (DNNs) should be your go-to choice. While DNNs are already used in many real-world image classification applications, this ML project aims to crank it up a notch.In this ML project, you will solve the problem of object detection by leveraging DNNs. You will have to develop a model that can both classify objects and also accurately localize objects of different classes. Here, you will treat the task of object detection as a regression problem to object bounding box masks. Also, you will define a multi-scale inference procedure that can generate high-resolution object detections at a minimal cost.

### 3. ****Fake News Detection****

This is one of the excellent machine learning project ideas for beginners, especially how fake news are spreading like wildfire now. Fake news has a knack for spreading like wildfire. And with social media dominating our lives right now, it has become more critical than ever to distinguish fake news from real news events. This is where Machine Learning can help. Facebook already uses AI to filter fake and spammy stories from the feeds of users. This ML project aims to leverage NLP (Natural Language Processing) techniques to detect fake news and misleading stories that emerge from non-reputable sources. You can also use the classic text classification approach to design a model that can differentiate between real and fake news. In the latter method, you can collect datasets for both real and fake news and create an ML model using the Naive Bayes classifier to classify a piece of news as fraudulent or real based on the words and phrases used in it.

### 4. ****Mall customers project****

As the name suggests, the [mall customers dataset](https://www.kaggle.com/shwetabh123/mall-customers) includes the records of people who visited the mall, such as gender, age, customer ID, annual income, spending score, etc. You will build a model that will use this data to segment the customers into different groups based on their behavior patterns. Such customer segmentation is a highly useful marketing tactic used by brands and marketers to boost sales and revenue while also increasing customer satisfaction.

### 5. ****Recommendation system project****

This a rich dataset collection containing a [diverse range of datasets](https://cseweb.ucsd.edu/~jmcauley/datasets.html) gathered from popular websites like Goodreads book reviews, Amazon product reviews, social media, etc. Your goal is to build a recommendation engine (like the ones used by Amazon and Netflix) that can generate personalized recommendations for products, movies, music, etc., based on customer preferences, needs, and online behavior.

### 6. ****IMDB-Wiki project****

This labeled [dataset](https://data.vision.ee.ethz.ch/cvl/rrothe/imdb-wiki/) is probably one of the most extensive collections of face images gathered from across IMDB and Wikipedia. It has over 5 million face images labeled with age and gender. with labeled gender and age. You will create a model that can detect faces and predict their age and gender with accuracy. You can make different age segments/ranges like 0-10, 10-20, 30-40, and so on.

7. **Sentiment analysis for depression**

Depression is a major health concern globally. Each year, millions of people commit suicide due to depression and poor mental health. Usually, the stigma attached to mental health problems and delayed treatment are the two main causes behind this. In this project, you will leverage the data gathered from different social media platforms and analyze linguistic markers in social media posts to understand the mental health of individuals. The idea is to create a deep learning model that can offer valuable and accurate insights into one’s mental health much earlier than conventional methods.

8. **Handwritten equation solver**

Handwritten mathematical expression recognition is a crucial field of study in computer vision research. You will build a model and train it to solve handwritten mathematical equations using Convolutional Neural Networks. The model will also make use of image processing techniques. This project involves training the model with the right data to make it adept at reading handwritten digits, symbols, etc., to deliver correct results for mathematical equations of different complexity levels.

9. **Facial recognition to detect mood and recommend songs**

It is a known fact that people listen to music based on their current mood and feelings. So, why not create an application that can detect a person’s mood by their facial expressions and recommend songs accordingly? For this, you will use computer vision elements and techniques. The goal is to create a model that can effectively leverage computer vision to help computers gain a high-level understanding of images and videos.

10. **Disease prediction system**

This ML project is designed to predict diseases. You will create this model using R and R Studio and the [Breast Cancer Wisconsin (Diagnostic) Dataset](https://archive.ics.uci.edu/ml/datasets/Breast+Cancer+Wisconsin+%28Diagnostic%29). This dataset includes two predictor classes – benign and malignant breast mass. It is essential to have a basic knowledge of random forests and XGBoost for working on this project.

11. **Image regeneration for old & damaged reels**

Restoring old or damaged picture reels is a challenging task. It is almost always impossible to restore old photos to their original state. However, deep learning can solve this problem. You will build a deep learning model that can identify the defects in an image (scuffs, holes, folds, decoloration, etc.) and using Inpainting algorithms to restore it. You can even colorize old B&W images.

### 12. Stock Prices Predictor

One of the best ideas to start experimenting you hands-on Machine Learning projects for students is working on Stock Prices Predictor. Business organizations and companies today are on the lookout for software that can monitor and analyze the company performance and predict future prices of various stocks. And with so much data available on the stock market, it is a hotbed of opportunities for data scientists with an inclination for finance.

### 13. Develop A Neural Network That Can Read Handwriting

### One of the best ideas to start experimenting you hands-on Java projects for students is working on neural network. Deep learning and neural networks are the two happening buzzwords in AI. These have given us technological marvels like driverless-cars, image recognition, and so on. So, now’s the time to explore the arena of neural networks. Begin your neural network machine learning project with the MNIST Handwritten Digit Classification Challenge. It has a very user-friendly interface that’s ideal for beginners.

### 14. Movie Ticket Pricing System

With the expansion of OTT platforms like Netflix, Amazon Prime, people prefer to watch content as per their convenience. Factors like Pricing, Content Quality & Marketing have influenced the success of these platforms. The cost of making a full-length movie has shot up exponentially in the recent past. Only 10% of the movies that are made make profits. Stiff competition from Television & OTT platforms along with the high ticket cost has made it difficult for films to make money even harder. The rising cost of the theatre ticket (along with the popcorn cost) leaves the cinema hall empty. **An advanced ticket pricing system can definitely help the movie makers and viewers. Ticket price can be higher with the rise in demand for ticket and vice versa.** The earlier the viewer books the ticket, the lesser the cost, for a movie with high demand. The system should smartly calculate the pricing depending on the interest of the viewers, social signals and supply-demand factors.

### 15. ****Iris Flowers Classification ML Project****

One of the best ideas to start experimenting you hands-on Machine Learning projects for students is working on Iris Flowers classification ML project. Iris flowers dataset is one of the best datasets for classification tasks. Since iris flowers are of varied species, they can be distinguished based on the length of sepals and petals. This ML project aims to classify the flowers into among the three species – Virginica, Setosa, or Versicolor. This particular ML project is usually referred to as the “Hello World” of Machine Learning. The iris flowers dataset contains numeric attributes, and it is perfect for beginners to learn about supervised ML algorithms, mainly how to load and handle data. Also, since this is a small dataset, it can easily fit in memory without requiring special transformations or scaling capabilities.

### 16. ****BigMart Sales Prediction ML Project****

This is an excellent ML project idea for beginners. This ML project is best for learning how unsupervised ML algorithms function. The BigMart sales dataset comprises of precisely 2013 sales data for 1559 products across ten outlets in various cities. The aim here is to use the BigMart sales dataset to develop a regression model that can predict the sale of each of 1559 products in the upcoming year in the ten different BigMart outlets. The BigMart sales dataset contains specific attributes for each product and outlet, thereby helping you to understand the properties of the different products and stores that influence the overall sales of BigMart as a brand.

17. **Music generator**

A music composition is nothing but a melodious combination of different frequency levels. In this project, you will design an automatic music generator that can compose short pieces of music with minimal human intervention. You will use deep learning algorithms and LTSM networks for building this music generator.

### 18. ****Cityscapes project****

This [open-source dataset](https://www.cityscapes-dataset.com/) includes high-quality pixel-level annotations of video sequences collected from the streets across 50 different cities. It is immensely useful for semantic analysis. You can use this dataset to train deep neural nets to analyze and understand the urban cityscape. The project involves designing a model that can perform image segmentation and identify various objects (cars, buses, trucks, trees, roads, people, etc.) from a street video sequence.

### 19. ****Librispeech project****

The [librispeech dataset](http://www.openslr.org/12) is a massive collection of English speeches derived from the LibriVox project. It contains English-read speeches in various accents that span over 1000 hours and is the perfect tool for speech recognition. The focus of this project is to create a model that can automatically translate audio into text. You will build a speech recognition system that can detect English speech and translate it into text format.

### 20. ****German traffic sign recognition benchmark (GTSRB) project****

This [dataset](http://benchmark.ini.rub.de/?section=gtsrb&subsection=dataset) contains more than 50,000 images of traffic signs segmented into 43 classes and containing information on the bounding box of each traffic sign. It is ideal for multiclass classification which is exactly what you will focus on here. You will build a model using a deep learning framework that can recognize the bounding box of signs and classify traffic signs. The project can be extremely useful for autonomous vehicles as it detects signs and helps drivers take the necessary actions.