Prior Knowledge:

The prior knowledge needed to build the application for the chosen problem is discussed below.

1. Supervised and Unsupervised Learning

    Supervised learning is a machine learning method in which models are trained using labeled data. In supervised learning, models need to find the mapping function to map the input variable (X) with the output variable (Y). Supervised learning needs supervision to train the model, which is similar to as a student learns things in the presence of a teacher. Unsupervised learning is another machine learning method in which patterns inferred from the unlabeled input data. The goal of unsupervised learning is to find the structure and patterns from the input data. Unsupervised learning does not need any supervision. Instead, it finds patterns from the data by its own.

2. Regression, Classification and Clustering

    Regression and Classification are types of supervised learning algorithms while Clustering is a type of unsupervised algorithm. When the output variable is continuous, then it is a regression problem whereas when it contains discrete values, it is a classification problem. Clustering algorithms are generally used when we need to create the clusters based on the characteristics of the data points.

3. Artificial Neural Networks

    Artificial neural networks, usually simply called neural networks or neural nets, are computing systems inspired by the biological neural networks that constitute animal brains. An ANN is based on a collection of connected units or nodes called artificial neurons, which loosely model the neurons in a biological brain.

4. Convolutional Neural Networks

    A Convolutional Neural Network (ConvNet/CNN) is a Deep Learning algorithm that can take in an input image, assign importance (learnable weights and biases) to various aspects/objects in the image, and be able to differentiate one from the other. The pre-processing required in a ConvNet is much lower as compared to other classification algorithms. While in primitive methods filters are hand-engineered, with enough training, ConvNets have the ability to learn these filters/characteristics.

5. Python Flask

Flask is a micro web-framework written in Python. It is classified as a micro-framework because it does not require particular tools or libraries. It has no database abstraction layer, form validation, or any other components where pre-existing third-party libraries provide common functions. However, Flask supports extensions that can add application features as if they were implemented in Flask itself. Extensions exist for object-relational mappers, form validation, upload handling, various open authentication technologies and several common framework related tools.