SYLLABUS

SUPERVISED MACHINE LEARNING WITH PYTHON THEORY-SEM 5

UNIT-I: MACHINE LEARNING BASICS

What is machine learning? Key terminology, Key tasksof machine learning, How to choose right algorithm, steps in developing a machinelearning, why python? Getting started with Numpy library Classifying with k- Nearest Neighbors: The k-Nearest Neighbors classification algorithm, Parsing and importing data from a text file, Creating scatter plots with Matplotlib, Normalizing numeric values

UNIT-II: SPLITTING DATASETS ONE FEATURE AT A TIME-DECISION TREES

Introducing decision trees, measuring consistency in a dataset, using recursion to construct a decision tree, plotting trees in Matplotlib

UNIT III: CLASSIFYING WITH PROBABILITY THEORY-NAÏVE BAYES

Using probability distributions for classification, learning the naïve Bayes classifier, Parsing data from RSS feeds, using naïve Bayes to reveal regional attitudes

UNIT IV: LOGISTIC REGRESSION

Classification with logistic regression and the sigmoidfunction, Using optimization to find the best regression coefficients, the gradientdescent optimization algorithm, Dealing with missing values in the our data

UNIT V: SUPPORT VECTOR MACHINES

Introducing support vector machines, using the SMO algorithm for optimization, using kernels to "transform" data, Comparing support vector machines with other classifiersSensor & Actuators with Arduino: Overview of Sensors working. Analog and Digital Sensors, Interfacing of Temperature, Humidity, Motion, Light and Gas Sensors with Arduino, Interfacing of Actuators with Arduino, Interfacing of Relay Switch and Servo Motor with Arduino.