In [3]:

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import csv
import random
import math
def loadCsv(filename):
   lines = csv.reader(open(filename, "r"))
   dataset = list(lines)
   for i in range(len(dataset)):
        dataset[i] = [float(x) for x in dataset[i]]
   return dataset
def splitDataset(dataset, splitRatio):
   trainSize = int(len(dataset) * splitRatio)
   trainSet = []
   copy = list(dataset)
   while len(trainSet) < trainSize:</pre>
        index = random.randrange(len(copy))
        trainSet.append(copy.pop(index))
   return [trainSet, copy]
def separateByClass(dataset):
   separated = {}
   for i in range(len(dataset)):
        vector = dataset[i]
        if(vector[-1] not in separated):
            separated[vector[-1]] = []
        separated[vector[-1]].append(vector)
   return separated
def mean(numbers):
   return sum(numbers)/float(len(numbers))
def stdev(numbers):
   avg = mean(numbers)
   variance = sum([pow(x-avg, 2) for x in numbers])/float(len(numbers)-1)
   return math.sqrt(variance)
def summarize(dataset):
    summaries = [(mean(attribute), stdev(attribute)) for attribute in zip(*dataset)]
    del summaries[-1]
   return summaries
def summarizeByClass(dataset):
    separated = separateByClass(dataset)
    summaries = {}
   for classValue, instances in separated.items():
        summaries[classValue] = summarize(instances)
   return summaries
def calculateProbability(x, mean, stdev):
    exponent = math.exp(-(math.pow(x-mean, 2)/(2*math.pow(stdev, 2))))
    return (1/(math.sqrt(2*math.pi)*stdev))*exponent
def calculateClassProbabilities(summaries, inputVector):
   probabilities = {}
    for classValue, classSummaries in summaries.items():
        probabilities[classValue] = 1
        for i in range(len(classSummaries)):
            mean, stdev = classSummaries[i]
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x = inputVector[i]
            probabilities[classValue] *= calculateProbability(x, mean, stdev)
        return probabilities
def predict(summaries, inputVector):
    probabilities = calculateClassProbabilities(summaries, inputVector)
    bestLabel, bestProb = None, -1
    for classValue, probability in probabilities.items():
        if bestLabel is None or probability > bestProb:
            bestProb = probability
            bestLabel = classValue
    return bestLabel
def getPredictions(summaries, testSet):
    predictions = []
    for i in range(len(testSet)):
        result = predict(summaries, testSet[i])
        predictions.append(result)
    return predictions
def getAccuracy(testSet, predictions):
    correct = 0
    for i in range(len(testSet)):
        if testSet[i][-1] == predictions[i]:
            correct += 1
    return (correct/float(len(testSet)))*100.0
def main():
    filename = 'pima-indians-diabetes.csv'
    splitRatio = 0.80
    dataset = loadCsv(filename)
    trainingSet, testSet = splitDataset(dataset, splitRatio)
    print('Split {0} rows into train = {1} and test = {2} rows'.format(len(dataset), len(tr
    summaries = summarizeByClass(trainingSet)
    predictions = getPredictions(summaries, testSet)
    accuracy = getAccuracy(testSet, predictions)
    print('Accuracy: {0}%'.format(accuracy))
main()
```

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Split 768 rows into train = 614 and test = 154 rows
Accuracy: 66.88311688311688%
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In []: