# Find-S Algorithm

import random

import csv

attr = [['Sunny','Rainy'],

['Warm','Cold'],

['Normal','High'],

['Strong','Weak'],

['Warm','Cool'],

['Same','Change']]

num\_attr = len(attr)

print (" \n The most general hypothesis : ['?','?','?','?','?','?']\n")

print ("\n The most specific hypothesis : ['Phi','Phi','Phi','Phi','Phi','Phi']\n")

The most general hypothesis : ['?','?','?','?','?','?']

The most specific hypothesis : ['Phi','Phi','Phi','Phi','Phi','Phi']

a = []

print("\n The Given Training Data Set \n")

with open('/content/drive/My Drive/ML LAB/fnds.csv', 'r') as csvFile:

reader = csv.reader(csvFile)

for row in reader:

a.append (row)

print(row)

The Given Training Data Set

['Sunny', 'Warm', 'Normal', 'Strong', 'Warm', 'Same', 'Yes']

['Sunny', 'Warm', 'High', 'Strong', 'Warm', 'Same', 'Yes']

['Rainy', 'Cold', 'High', 'Strong', 'Warm', 'Change', 'No']

['Sunny', 'Warm', 'High', 'Strong', 'Cool', 'Change', 'Yes']

print("The initial value of hypothesis: ")

hypothesis = ['Phi'] \* num\_attr

print(hypothesis)

The initial value of hypothesis:

['Phi', 'Phi', 'Phi', 'Phi', 'Phi', 'Phi']

for j in range(0,num\_attr):

hypothesis[j] = a[0][j];

print("\n Find S: Finding a Maximally Specific Hypothesis\n")

for i in range(0,len(a)):

if a[i][num\_attr]=='Yes':

for j in range(0,num\_attr):

if a[i][j]!=hypothesis[j]:

hypothesis[j]='?'

else :

hypothesis[j]= a[i][j]

print(" For Training Example No :{0} the hypothesis is ".format(i),hypothesis)

print("\n The Maximally Specific Hypothesis for a given Training Examples :\n")

print(hypothesis)

Find S: Finding a Maximally Specific Hypothesis

For Training Example No :0 the hypothesis is ['Sunny', 'Warm', 'Normal', 'Strong', 'Warm', 'Same']

For Training Example No :1 the hypothesis is ['Sunny', 'Warm', '?', 'Strong', 'Warm', 'Same']

For Training Example No :2 the hypothesis is ['Sunny', 'Warm', '?', 'Strong', 'Warm', 'Same']

For Training Example No :3 the hypothesis is ['Sunny', 'Warm', '?', 'Strong', '?', '?']

The Maximally Specific Hypothesis for a given Training Examples :

['Sunny', 'Warm', '?', 'Strong', '?', '?']