## JyotBuch\_9\_Assn2b-Candidate Elimination

## April 26, 2023

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[]: import numpy as np
     import pandas as pd
     data = pd.read_csv('data.csv')
     concepts = np.array(data.iloc[:,0:-1])
     print("\nInstances are:\n",concepts)
     target = np.array(data.iloc[:,-1])
     print("\nTarget Values are: ",target)
     def learn(concepts, target):
         specific_h = concepts[0].copy()
         print("\nInitialization of specific_h and general_h")
         print("\nSpecific Boundary: ", specific_h)
         general_h = [["?" for i in range(len(specific_h))] for i in_
      →range(len(specific_h))]
         print("\nGeneric Boundary: ",general_h)
         for i, h in enumerate(concepts):
             print("\nInstance", i+1 , "is ", h)
             if target[i] == "yes":
                 print("Instance is Positive ")
                 for x in range(len(specific_h)):
                     if h[x]!= specific_h[x]:
                         specific_h[x] ='?'
                         general_h[x][x] = '?'
             if target[i] == "no":
                 print("Instance is Negative ")
                 for x in range(len(specific_h)):
                     if h[x]!= specific_h[x]:
                         general_h[x][x] = specific_h[x]
                     else:
                         general_h[x][x] = '?'
             print("Specific Bundary after ", i+1, "Instance is ", specific_h)
             print("Generic Boundary after ", i+1, "Instance is ", general_h)
             print("\n")
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indices = [i for i, val in enumerate(general h) if val == ['?', '?', '?', '?']
 for i in indices:
        general_h.remove(['?', '?', '?', '?', '?', '?'])
    return specific h, general h
s_final, g_final = learn(concepts, target)
print("Final Specific_h: ", s_final, sep="\n")
print("Final General_h: ", g_final, sep="\n")
Instances are:
 [['sunny' 'warm' 'normal' 'strong' 'warm' 'same']
 ['sunny' 'warm' 'high' 'strong' 'warm' 'same']
 ['rainy' 'cold' 'high' 'strong' 'warm' 'change']
 ['sunny' 'warm' 'high' 'strong' 'cool' 'change']]
Target Values are: ['yes' 'yes' 'no' 'yes']
Initialization of specific_h and general_h
Specific Boundary: ['sunny' 'warm' 'normal' 'strong' 'warm' 'same']
Generic Boundary: [['?', '?', '?', '?', '?'], ['?', '?', '?', '?',
'?'], ['?', '?', '?', '?', '?', '?'], ['?', '?', '?', '?', '?', '?'], ['?', '?',
'?', '?', '?', '?'], ['?', '?', '?', '?', '?']]
Instance 1 is ['sunny' 'warm' 'normal' 'strong' 'warm' 'same']
Instance is Positive
Specific Bundary after 1 Instance is ['sunny' 'warm' 'normal' 'strong' 'warm'
'same']
Generic Boundary after 1 Instance is [['?', '?', '?', '?', '?', '?'], ['?',
'?', '?', '?', '?', '?'], ['?', '?', '?', '?', '?', '?'], ['?', '?', '?', '?',
'?', '?'], ['?', '?', '?', '?', '?'], ['?', '?', '?', '?', '?', '?']
Instance 2 is ['sunny' 'warm' 'high' 'strong' 'warm' 'same']
Instance is Positive
Specific Bundary after 2 Instance is ['sunny' 'warm' '?' 'strong' 'warm'
'same']
Generic Boundary after 2 Instance is [['?', '?', '?', '?', '?', '?'], ['?',
'?', '?', '?', '?', '?'], ['?', '?', '?', '?', '?'], ['?', '?', '?', '?',
'?', '?'], ['?', '?', '?', '?', '?'], ['?', '?', '?', '?', '?', '?']
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Instance 3 is ['rainy' 'cold' 'high' 'strong' 'warm' 'change']
Instance is Negative
Specific Bundary after 3 Instance is ['sunny' 'warm' '?' 'strong' 'warm'
'same'l
Generic Boundary after 3 Instance is [['sunny', '?', '?', '?', '?'],
['?', 'warm', '?', '?', '?', '?'], ['?', '?', '?', '?', '?'], ['?', '?']
'?', '?', '?', '?'], ['?', '?', '?', '?', '?'], ['?', '?', '?', '?', '?',
'same']]
Instance 4 is ['sunny' 'warm' 'high' 'strong' 'cool' 'change']
Instance is Positive
Specific Bundary after 4 Instance is ['sunny' 'warm' '?' 'strong' '?' '?']
Generic Boundary after 4 Instance is [['sunny', '?', '?', '?', '?'],
['?', 'warm', '?', '?', '?', '?'], ['?', '?', '?', '?', '?', '?'], ['?', '?',
'?', '?', '?', '?'], ['?', '?', '?', '?', '?'], ['?', '?', '?', '?', '?',
'?']]
Final Specific h:
['sunny' 'warm' '?' 'strong' '?' '?']
Final General_h:
[['sunny', '?', '?', '?', '?'], ['?', 'warm', '?', '?', '?', '?']]
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