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In [2]: !pip install bayespy

Requirement already satisfied: bayespy in /srv/conda/envs/notebook/lib/python3.7/site-packages (0.5.22)
Requirement already satisfied: h5py in /srv/conda/envs/notebook/lib/python3.7/site-packages (from bayespy) (3.1.0)
Requirement already satisfied: numpy>=1.10.0 in /srv/conda/envs/notebook/lib/python3.7/site-packages (from bayespy) (1.20.2)
Requirement already satisfied: scipy>=0.13.0 in /srv/conda/envs/notebook/lib/python3.7/site-packages (from bayespy) (1.6.2)
Requirement already satisfied: cached-property in /srv/conda/envs/notebook/lib/python3.7/site-packages (from h5py->bayespy) (1.5.2)
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In [3]: import pandas as pd
import numpy as np
from bayespy.nodes import Categorical
from bayespy.nodes import Dirichlet
from bayespy.nodes import MultiMixture
import csv
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In [4]: heartdisease = pd.read_csv('image.csv')
print("Instances of heartdisease")
print(heartdisease.head())
heartdisease = np.array(heartdisease, dtype='int8')
n = len(heartdisease)
print(n)

age = {'SuperSeniorCitizen':0, 'SeniorCitizen':1, 'MiddleAged':2, 'Youth':3, 'Teen':4}
gender = {'Male':0, 'Female':1}
fhistory = {'Yes':0, 'No':1}
dietintake = {'High':0, 'Medium':1, 'Low':2}
lifestyle = {'Sedentary':0, 'Moderate':1, 'Active':2, 'Athlete':3}
cholesterol = {'High':0, 'BorderLine':1, 'Normal':2}
hdtarget = {'Yes':0, 'No':1}
```

```
Instances of heartdisease
  People  gender  famil history  diet  lifestyle  cholesterol  target
0       0       0           0     1         0           0         0
1       0       1           0     1         0           0         0
2       1       0           1     0         1           1         0
3       4       0           0     1         0           2         1
4       3       1           0     0         3           2         1
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In [6]: page = Dirichlet(1.0*np.ones(5))
ageob = Categorical(page, plates=(n,))
ageob.observe(heartdisease[:, 0])

pgender = Dirichlet(1.0*np.ones(2))
genderob = Categorical(pgender, plates=(n,))
genderob.observe(heartdisease[:, 1])

pfhistory = Dirichlet(1.0*np.ones(2))
fhistoryob = Categorical(pfhistory, plates=(n,))
fhistoryob.observe(heartdisease[:, 2])

pdiet = Dirichlet(1.0*np.ones(3))
dietob = Categorical(pdiet, plates=(n,))
dietob.observe(heartdisease[:, 3])

plifestyle = Dirichlet(1.0*np.ones(4))
lifestyleob = Categorical(plifestyle, plates=(n,))
lifestyleob.observe(heartdisease[:, 4])

pcholesterol = Dirichlet(1.0*np.ones(3))
cholesterolob = Categorical(pcholesterol, plates=(n,))
cholesterolob.observe(heartdisease[:, 5])

pheartdisease = Dirichlet(np.ones(2), plates=(5,2,2,3,4,3))
heartdiseaseob = MultiMixture([ageob, genderob, fhistoryob, dietob, lifestyleob, cholesterolob], Categorical, pheartdisease)
heartdiseaseob.observe(heartdisease[:, 6])

pheartdisease.update()
```

```
In [9]: print("Calculate Probabilty Diagnosis")

i = 1
while i == 1:
    print("\n")
    prob = MultiMixture([int(input("Age: "+str(age)) or "3"),int(input("Gender: "+str(gender)) or "1"),int(input("Diet: "+str(dietintake)) or "1"),int(input("Lifestyle: "+str(lifestyle)) or "2"),int(input("Family History: "+str(fh:
    prob = prob.get_moments()[0][hdtarget['Yes']]
    print("Diagnosis Probabilty= " + str(prob))
    i = int(input("continue? (Yes: 1 / No : 0)"))
```

Diagnosis Probabilty= 0.5