Assignment 9 : IEC2017047
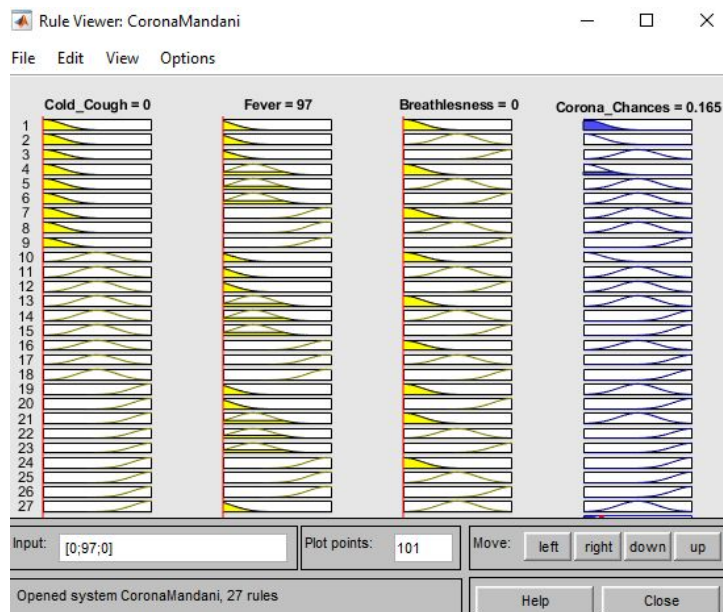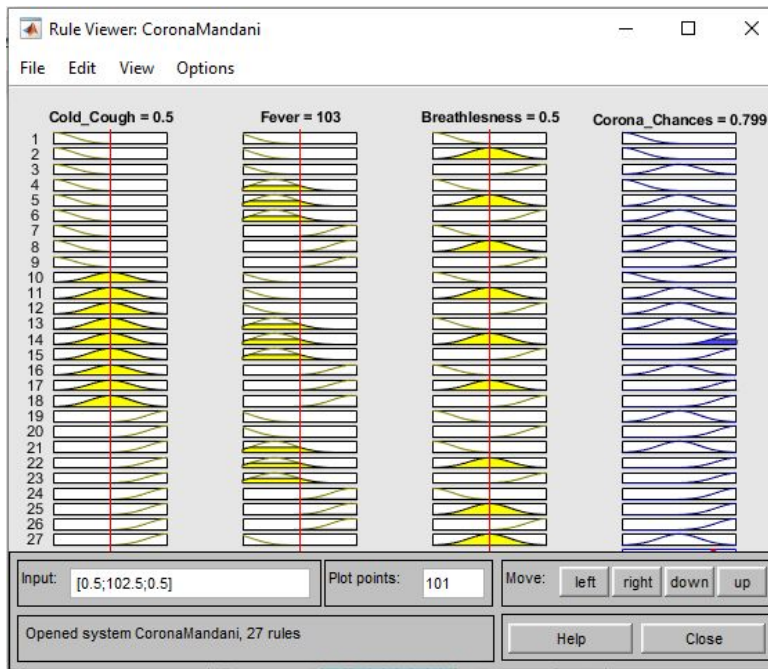
ANN-1

QUESTION DESCRIPTION:

Design a FIS to help doctors to diagnose whether a person has Coronavirus (COVID-19) infection or not based on symptoms. For designing FIS, use both Mamdani as well as Sugeno approaches and compare their results. Write comparative analysis as per your obtained results
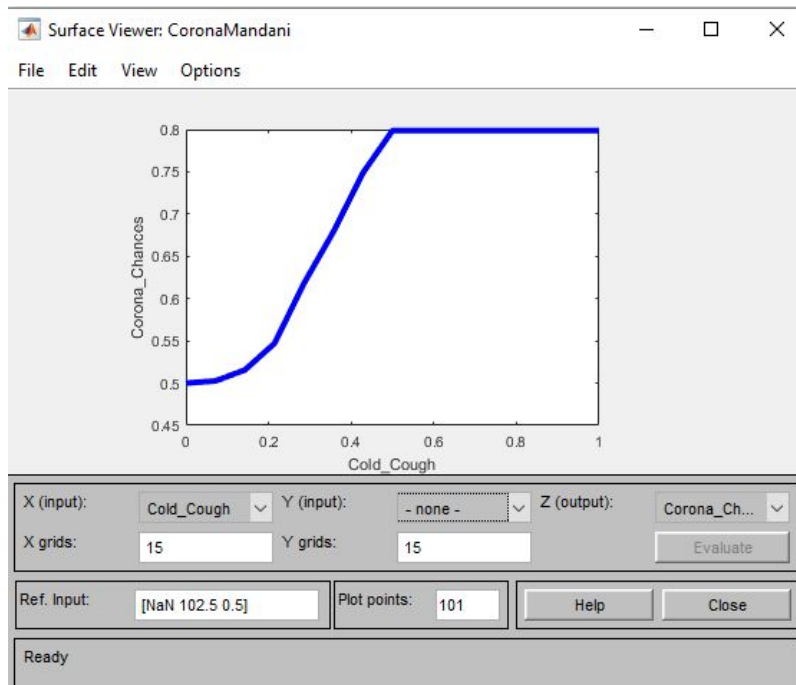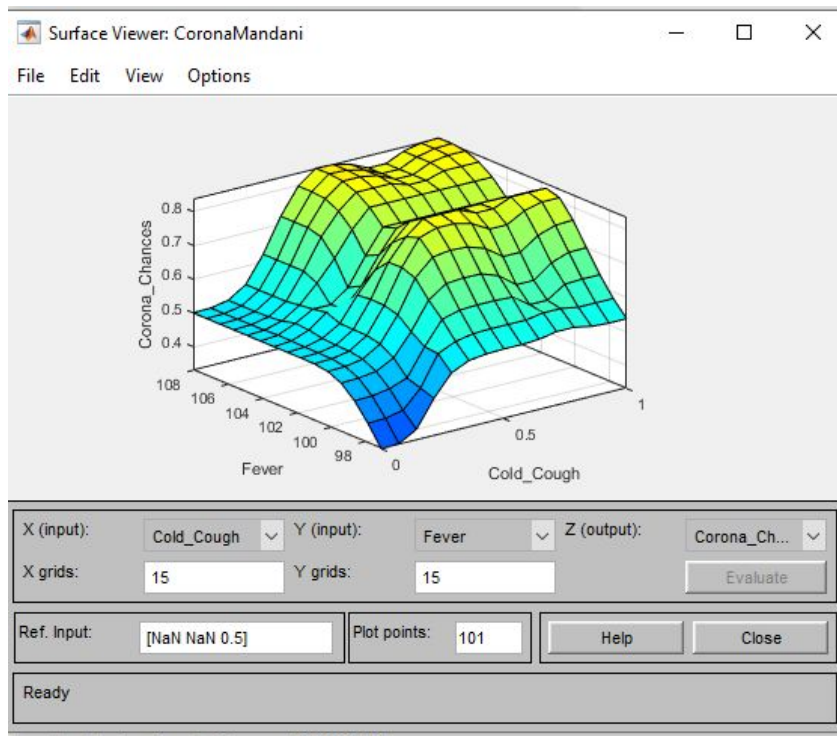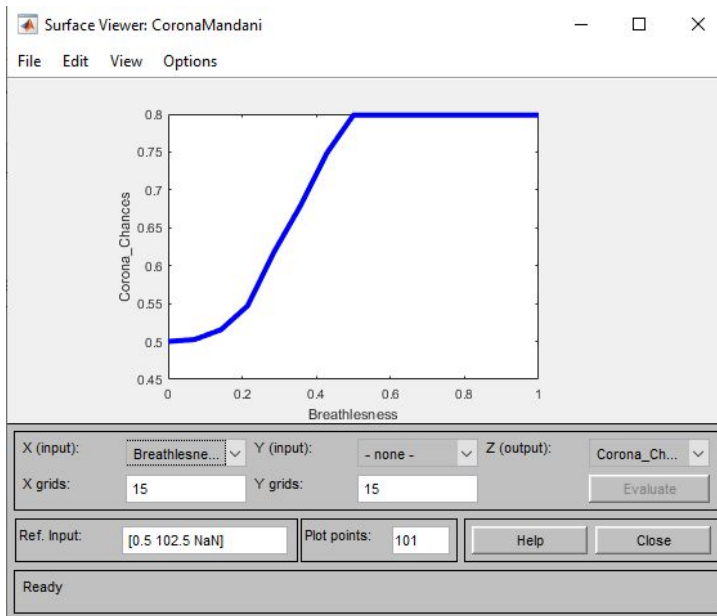
MAMDANI APPROACH:

Rules

Rule Viewer: CoronaMandani

File   Edit   View   Options

| Cold_Cough = 0.5 | Fever = 103 | Breathlesness = 0.5 | Corona_Chances = 0.799 |

Input: [0.5;102.5;0.5]   Plot points: 101   Move: left right down up

Opened system CoronaMandani, 27 rules   Help   Close

Rule Viewer: CoronaMandani

File   Edit   View   Options

| Cold_Cough = 1 | Fever = 108 | Breathlesness = 1 | Corona_Chances = 0.861 |

Input: [1;108;1]   Plot points: 101   Move: left right down up

Opened system CoronaMandani, 27 rules   Help   Close

Surface

Surface Viewer: CoronaMandani

File   Edit   View   Options

Corona_Chances vs Fever

X (input): Fever   Y (input): - none -   Z (output): Corona_Ch...
X grids: 15   Y grids: 15   Evaluate
Ref. Input: [0.5 NaN 0.5]   Plot points: 101   Help   Close
Ready

Surface Viewer: CoronaMandani

File   Edit   View   Options

Corona_Chances vs Breathlesness

X (input): Breathlesne...   Y (input): - none -   Z (output): Corona_Ch...
X grids: 15   Y grids: 15   Evaluate
Ref. Input: [0.5 102.5 NaN]   Plot points: 101   Help   Close
Ready

SUGENO APPROACH:

Rules

Surface

Surface Viewer: CoronaSugeno

File Edit View Options

X (input): Cold_Cough...   Y (input): - none -   Z (output): Corona_Ch...
X grids: 15   Y grids: 15   Evaluate
Ref. Input: [NaN 0.5 102.5]   Plot points: 101   Help   Close
Ready

Surface Viewer: CoronaSugeno

File Edit View Options

X (input): Breathlessn...   Y (input): - none -   Z (output): Corona_Ch...
X grids: 15   Y grids: 15   Evaluate
Ref. Input: [0.5 NaN 102.5]   Plot points: 101   Help   Close
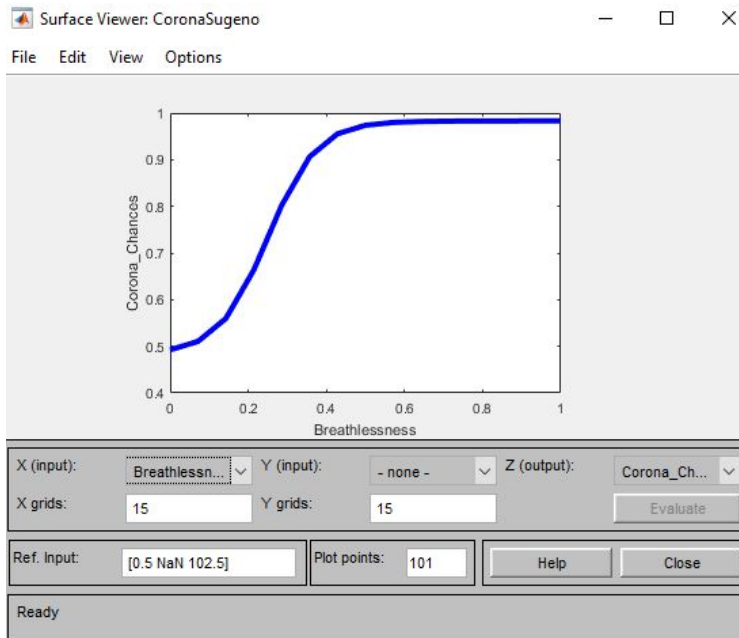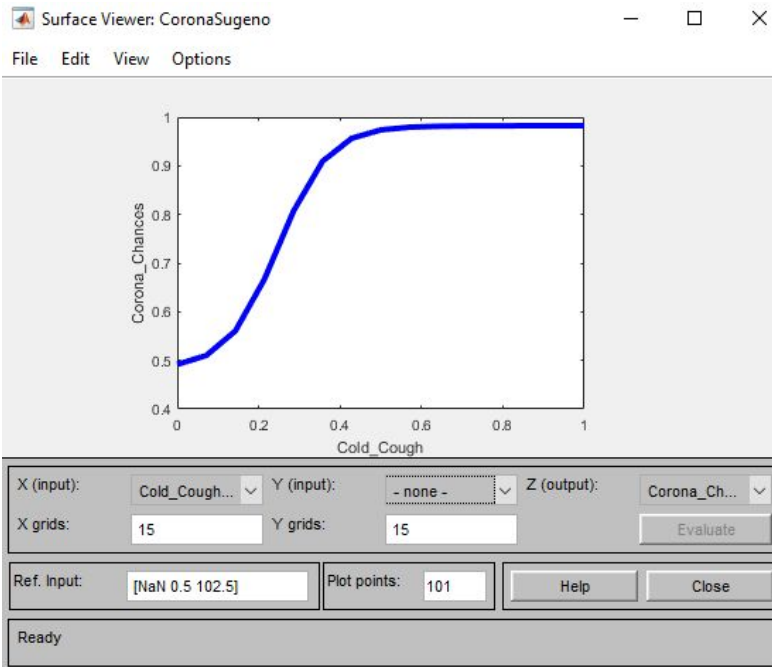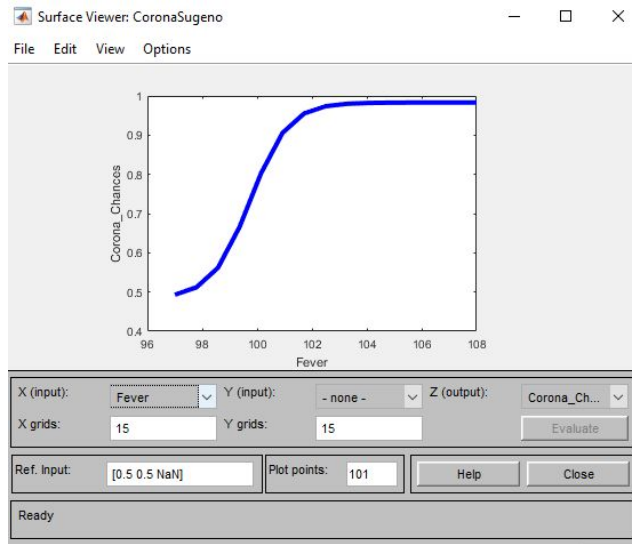Ready
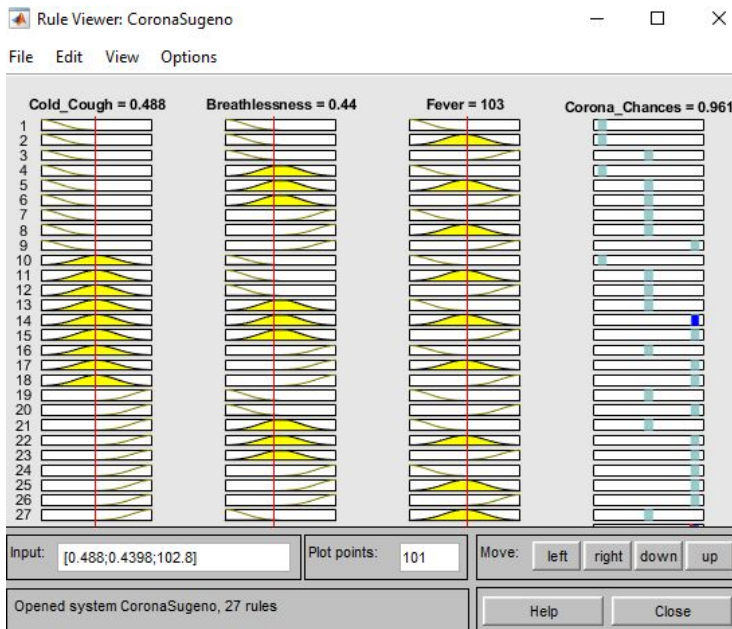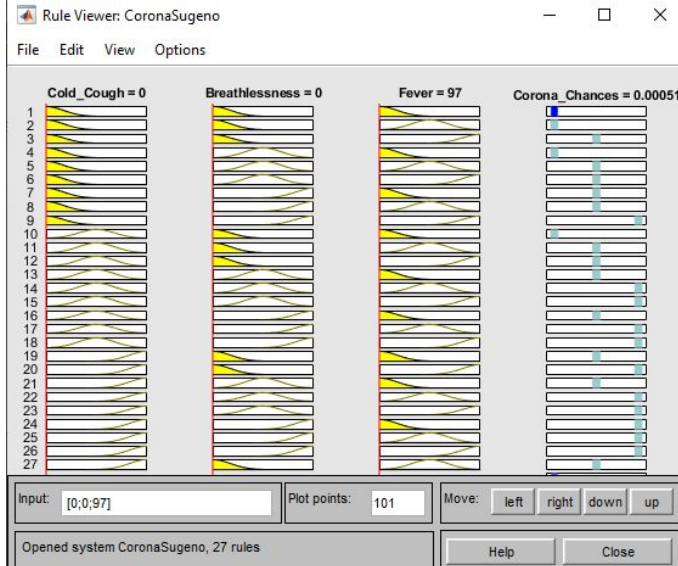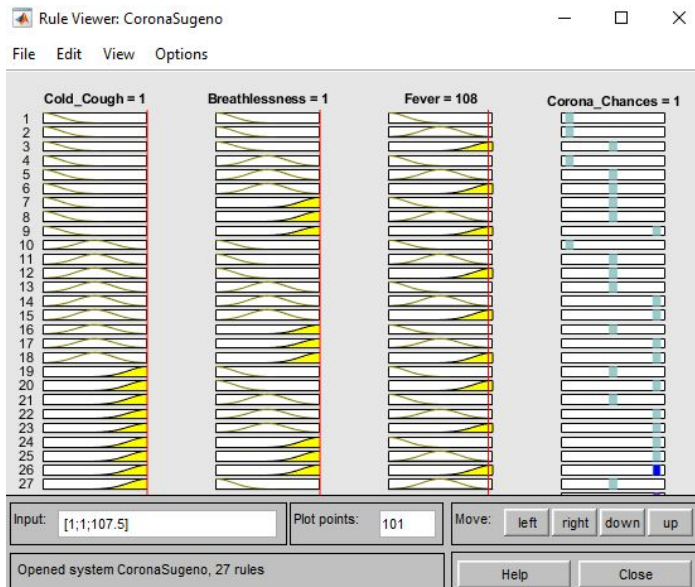
CONCLUSION:

In this case , the Sugeno approach gives best result as it gives crip outputs not like one in Mandani which gives somewhat vague answers