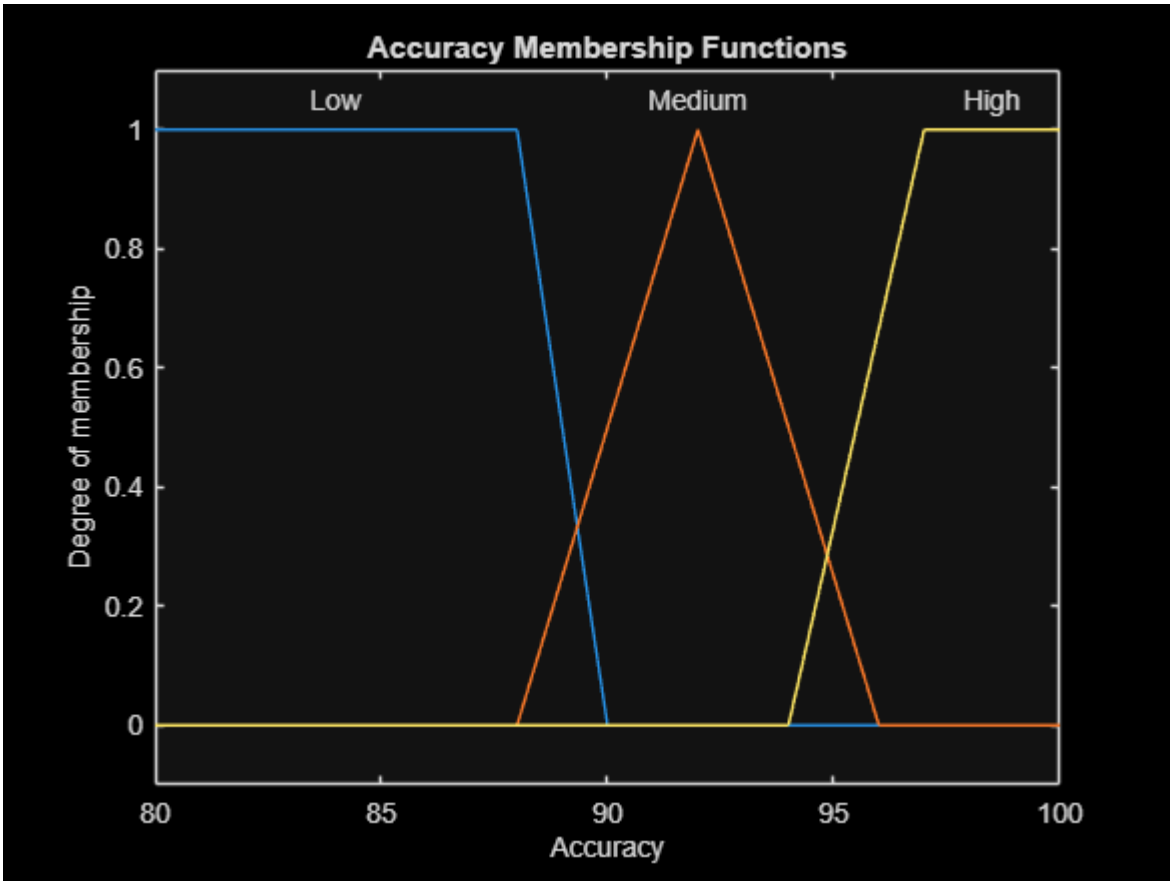
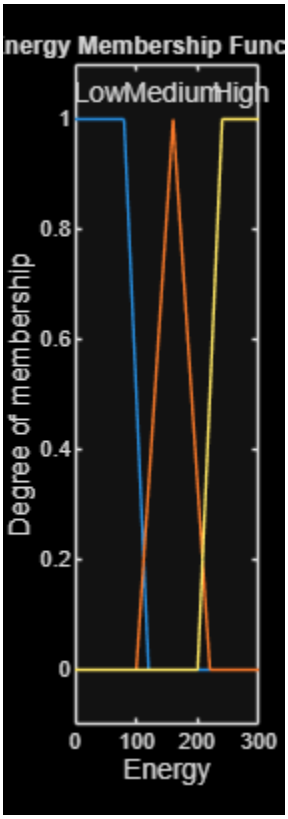
GREEN INTELLIGENCE - GENERATE FIS & GRAPHS

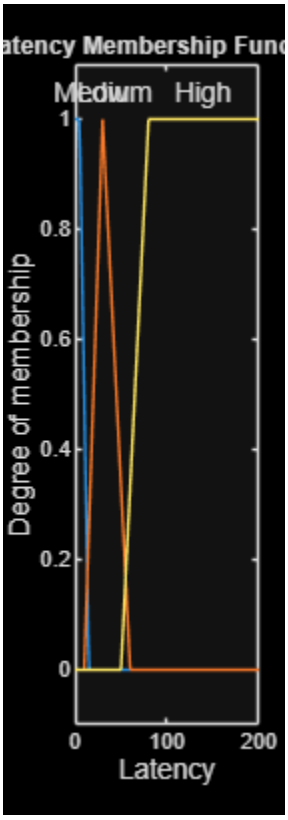
```
clc; clear; close all;

% 1. DEFINE THE FUZZY SYSTEM (The "Brain")
fis = mamfis('Name', 'GreenAI');

% INPUT 1: ACCURACY [80 - 100]
fis = addInput(fis, [80 100], 'Name', 'Accuracy');
fis = addMF(fis, 'Accuracy', 'trapmf', [80 80 88 90], 'Name', 'Low');
fis = addMF(fis, 'Accuracy', 'trimf', [88 92 96], 'Name', 'Medium');
fis = addMF(fis, 'Accuracy', 'trapmf', [94 97 100 100], 'Name', 'High');

% INPUT 2: ENERGY [0 - 300]
fis = addInput(fis, [0 300], 'Name', 'Energy');
fis = addMF(fis, 'Energy', 'trapmf', [0 0 80 120], 'Name', 'Low');       %
Efficient
fis = addMF(fis, 'Energy', 'trimf', [100 160 220], 'Name', 'Medium');
fis = addMF(fis, 'Energy', 'trapmf', [200 240 300 300], 'Name', 'High');  %
Inefficient

% INPUT 3: LATENCY [0 - 200]
fis = addInput(fis, [0 200], 'Name', 'Latency');
fis = addMF(fis, 'Latency', 'trapmf', [0 0 5 15], 'Name', 'Low');         %
Fast
fis = addMF(fis, 'Latency', 'trimf', [10 30 60], 'Name', 'Medium');
fis = addMF(fis, 'Latency', 'trapmf', [50 80 200 200], 'Name', 'High');   %
Slow

% OUTPUT: GIS SCORE [0 - 10]
fis = addOutput(fis, [0 10], 'Name', 'GIS');
fis = addMF(fis, 'GIS', 'trapmf', [0 0 3 5], 'Name', 'Poor');
fis = addMF(fis, 'GIS', 'trimf', [3 5 7], 'Name', 'Moderate');
fis = addMF(fis, 'GIS', 'trapmf', [6 8 10 10], 'Name', 'Optimal');

% RULES
ruleList = [
    3 1 1 3 1 1; % High Acc + Low En + Low Lat = Optimal
    3 2 1 3 1 1;
    3 1 2 2 1 1; % Moderate cases
    2 2 2 2 1 1;
    1 3 3 1 1 1; % Poor cases
    1 1 1 1 1 1;
    3 3 3 1 1 1;
];
fis = addRule(fis, ruleList);

% 2. SAVE THE .FIS FILE
writefis(fis, 'GreenAI_Model.fis');
disp('------------------------------------------------');
```

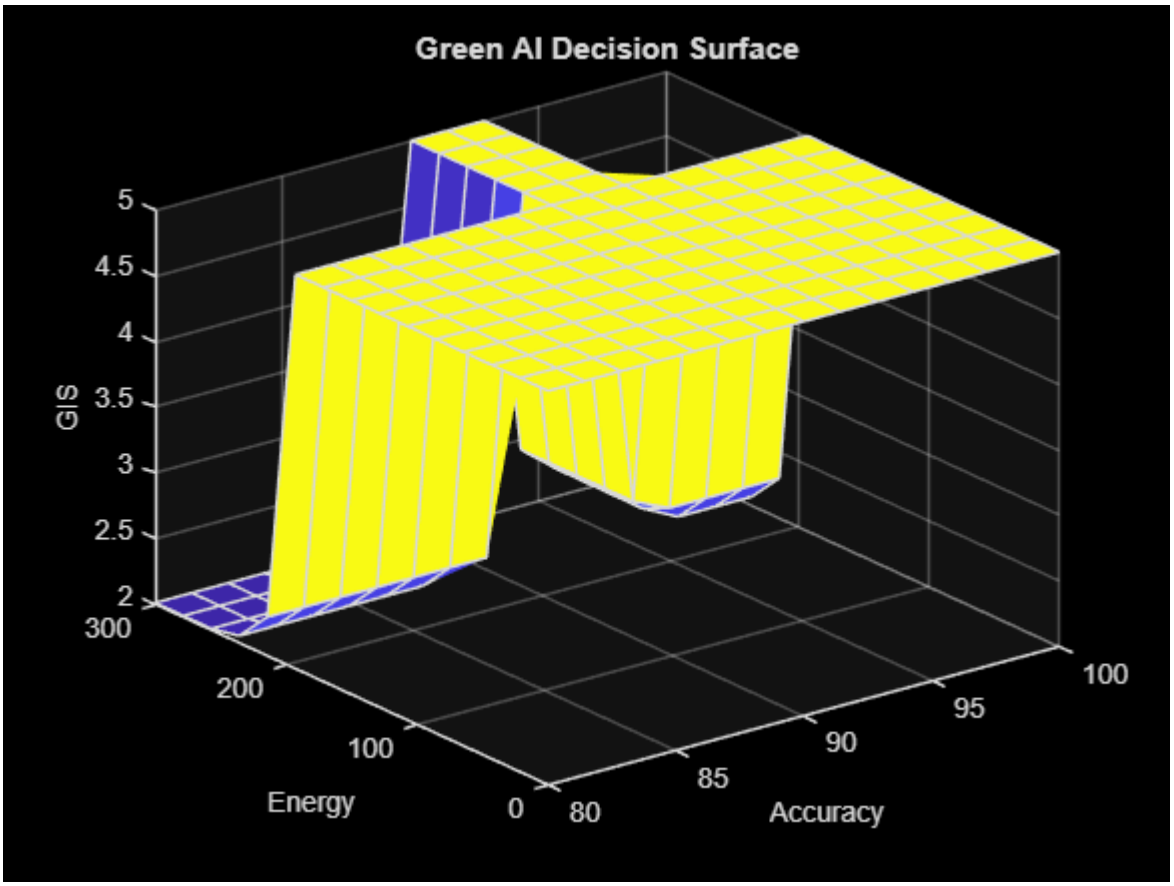
```
disp('SUCCESS!');
disp('Generated file: "GreenAI_Model.fis"');
disp('-----------------------------------------------');

% 3. GENERATE PLOTS (Take Screenshots!)

% Figure 1: Membership Functions for Accuracy
figure('Name', 'Input 1: Accuracy');
plotmf(fis, 'input', 1);
title('Accuracy Membership Functions');

% Figure 2: Membership Functions for Energy
figure('Name', 'Input 2: Energy');
plotmf(fis, 'input', 2);
title('Energy Membership Functions');

% Figure 3: Membership Functions for Latency
figure('Name', 'Input 3: Latency');
plotmf(fis, 'input', 3);
title('Latency Membership Functions');

% Figure 4: Surface View (The Cool 3D Graph)
figure('Name', 'Surface View');
gensurf(fis);
title('Green AI Decision Surface');
```

```
-----------------------------------------------
SUCCESS!
Generated file: "GreenAI_Model.fis"
-----------------------------------------------
```


Accuracy Membership Functions
Low
Medium
High
Degree of membership
0
0.2
0.4
0.6
0.8
1
80
85
90
95
100
Accuracy


nergy Membership Func
LowMediumHigh
Degree of membership
0
0.2
0.4
0.6
0.8
1
0
100
200
300
Energy


atency Membership Func
Medium
High
1
0.8
0.6
0.4
0.2
0
Degree of membership
0
100
200
Latency


Green AI Decision Surface
5
4.5
4
3.5
3
2.5
2
GIS
300
200
100
0
Energy
80
85
90
95
100
Accuracy

Published with MATLAB® R2025b