

Assignment 4, COMP4702

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Prac 10

Question 3

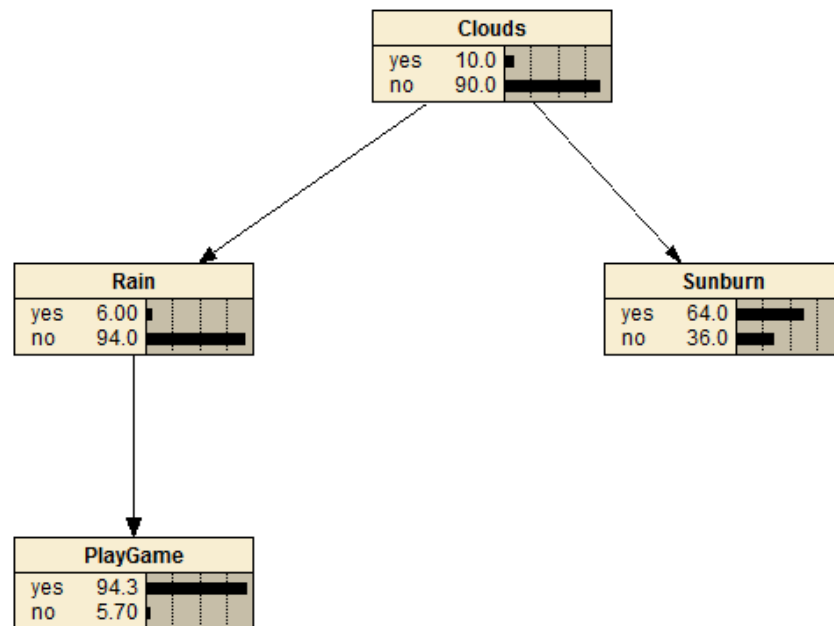


Figure 1: Network

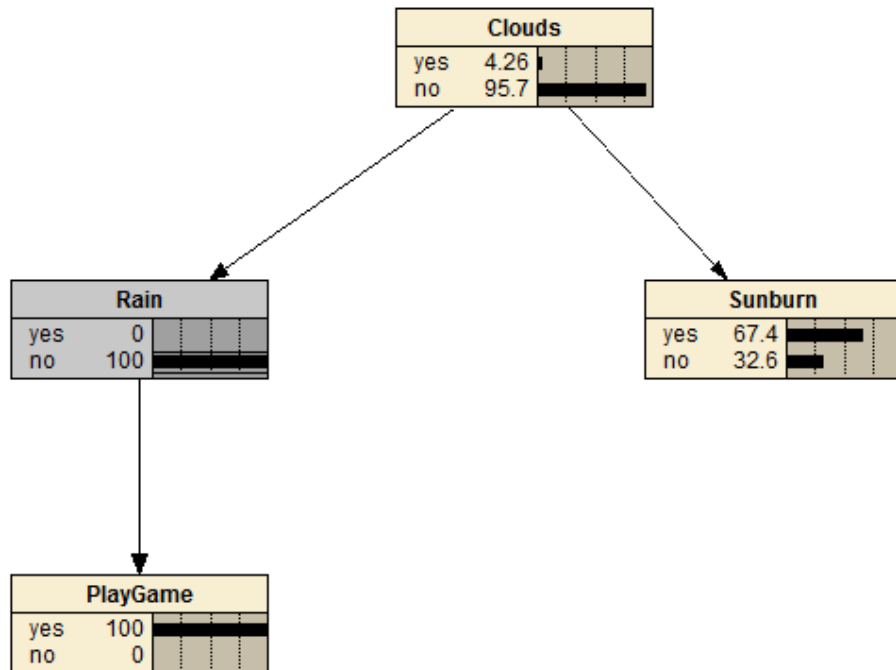


Figure 2: No Rain

If there is no rain then the chance of clouds decrease by around a half, to 4.26%. Since it is not raining, there is a 100% chance the game will be played. Additionally the chance of sunburn increases by around 3%.

Question 4

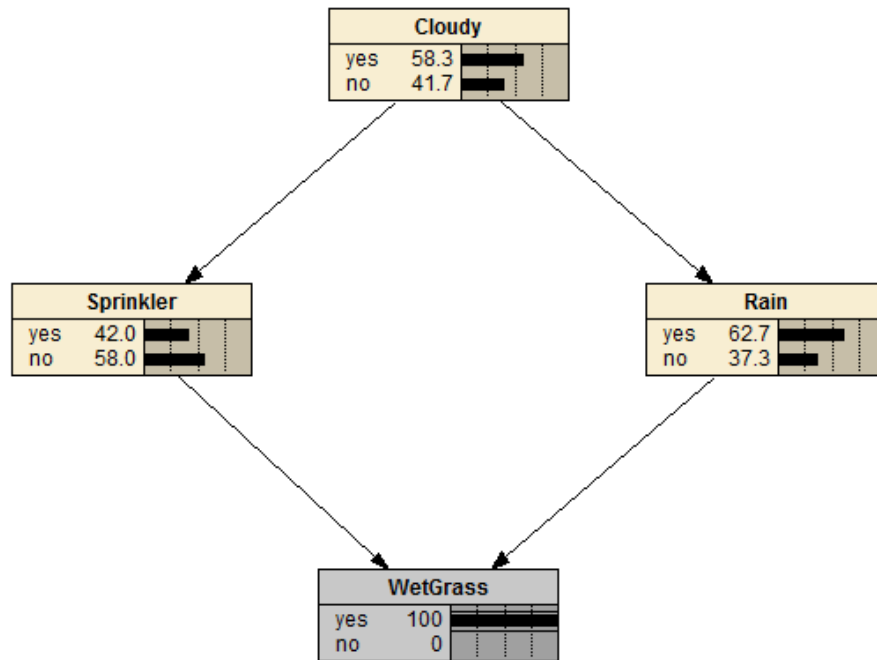


Figure 3: Network

Prac 11

0.1 Question 1

```
1 % Prac 11 Q1
2 % Roy Portas
3
4 % Get the data range
5 x = [-1:0.05:8];
6
7 % Sample average (m)
8 m = mean(data);
9 % mu is also the mean
10 mu = m;
```

```

11
12
13 % Number of samples (N)
14 d = size(data);
15 N = d(1);
16
17 % Get the variance of data
18 sigma = var(data);
19
20 hold on;
21 % Plot normal
22 % plot(x, normpdf(x, mu, sigma));
23
24 % Chosen from inspecting the chart of the prac sheet
25 mu0 = 2;
26 sigma0 = 0.4;
27
28 % Plot data
29 scatter(data, zeros(size(data)), 'x');
30
31 posterior_mu = (sigma / (N * sigma0 + sigma) * mu0) + (N * sigma0
    / (N * sigma0 + sigma) * m);
32 posterior_sigma = 1/(1/sigma0 + N/sigma);
33
34 % Posterior
35 plot(x, normpdf(x, posterior_mu, posterior_sigma), 'b');
36
37 % Prior
38 plot(x, normpdf(x, mu0, sigma0), 'r');
39
40 legend('Data', 'Posterior', 'Prior');

```

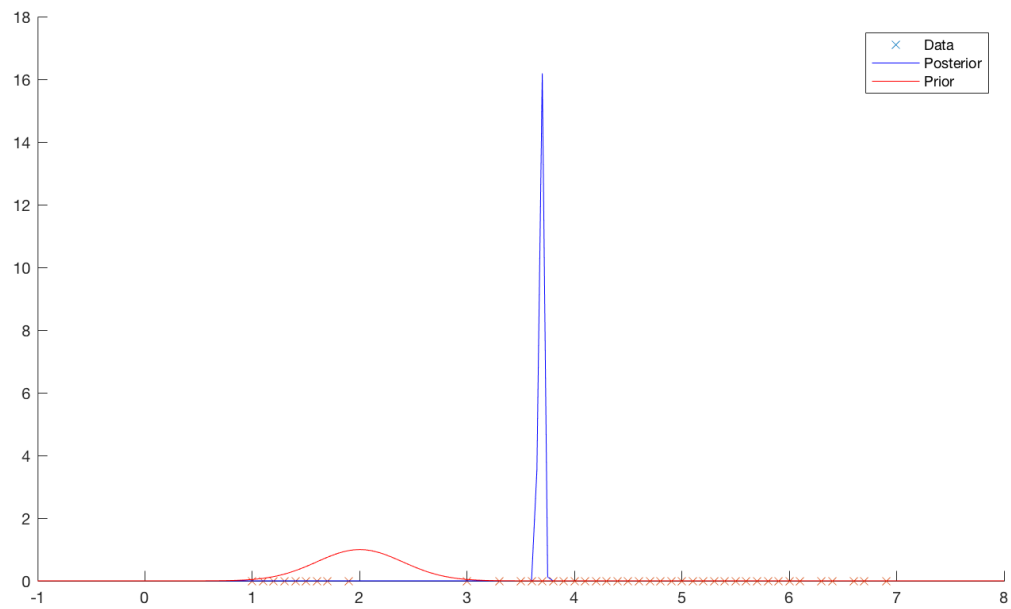


Figure 4: Model prior and posterior distributions