Figures

Figure 1: Distribution of Insomnia by ISI

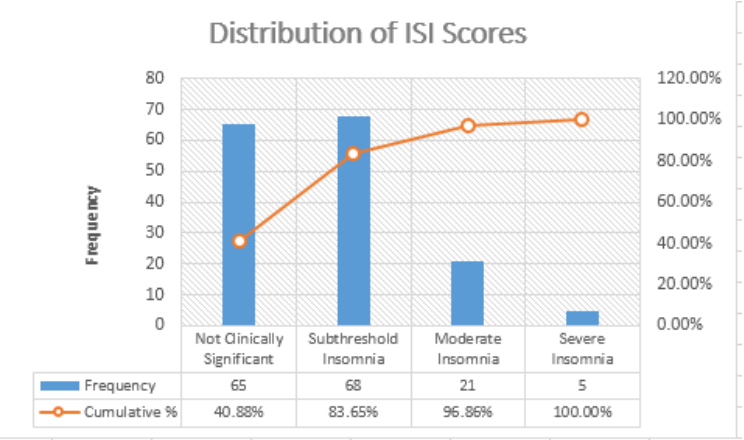
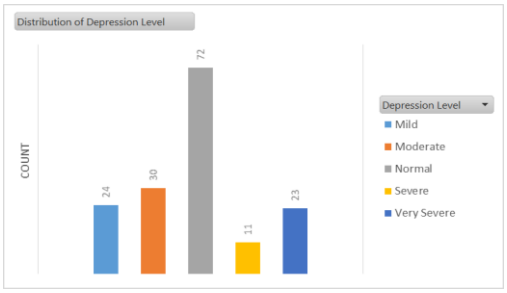
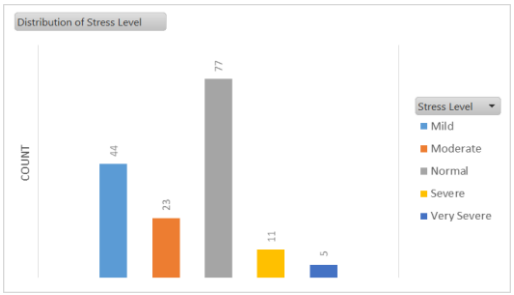


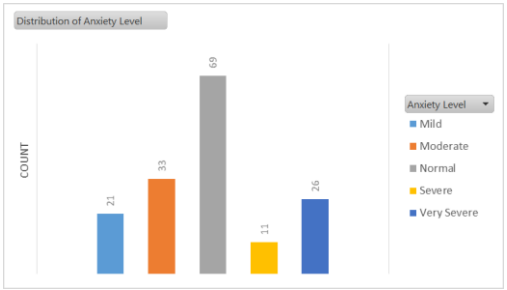
Figure 2: Distribution of Input Parameters where (A) shows the distribution of depression levels, (B) shows the distribution of anxiety levels, (C) shows the distribution of stress levels and (D) is an indication of the distribution of the social impairment of the individual.



A



C



B

D

Figure 3: Probability of Insomnia by ISI

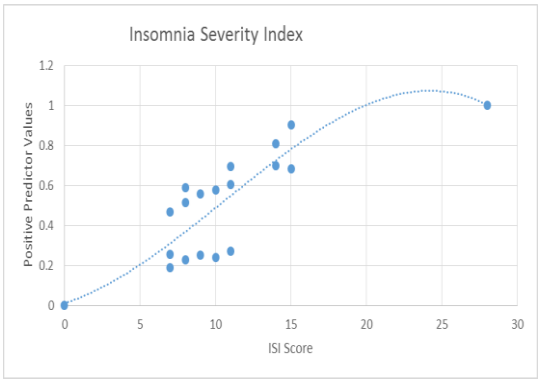


Figure 4: Probability of Insomnia by AIS

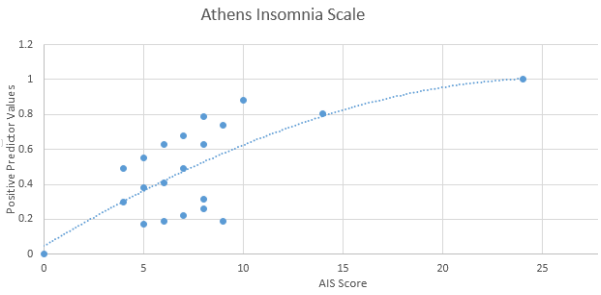


Figure 5: Distribution of Modelling Results

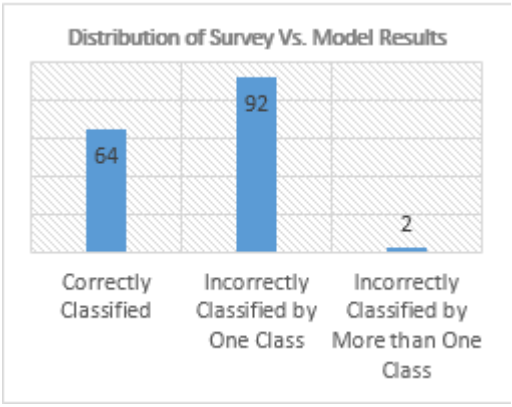


Figure 6: Architecture of Neural Network Model Used

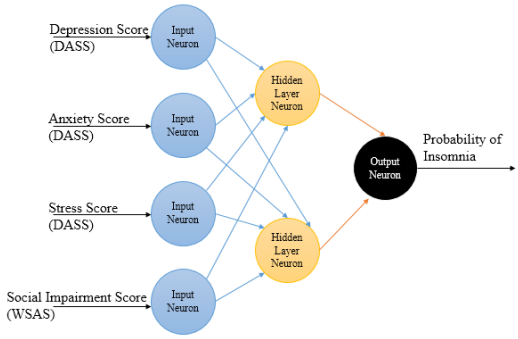


Figure 7: Weights and Biases of Neural Network Constructed

```
INPUT LAYER
 Weights= [[ 0.23750466  0.04639655 -0.24607953 -0.44828144]
 [ 0.27007988  0.04250078 -0.84701687  0.3388873 ]
 [-0.30441761  0.09906229  0.06728983  0.78564161]
 [ 1.08677292  0.47017142  0.58408719 -0.06906366]]

Biases= [-0.03655045  0.06441985 -0.06928927  0.000889  ]


HIDDEN LAYER
 Weights= [[-0.8178547  -0.66329497]
 [-0.86857063 -0.58595091]
 [ 0.55786157  0.48980752]
 [-0.79342467 -0.67766297]]

Biases= [-0.06349722  0.06484404]


OUTPUT LAYER
 Weights= [[-1.2756933 ]
 [ 1.10629416]]

Biases= [ 0.06423491]
```

Figure 8: A Section of Results

```
MEAN SQUARED ERROR:  0.017137655952

RMSE VALUE:  0.130910870259

Actual=[ 0.44155435], Predicted=[ 0.63278139]
Actual=[ 0.83597372], Predicted=[ 0.74399626]
Actual=[ 0.53523338], Predicted=[ 0.57328629]
Actual=[ 0.6469186], Predicted=[ 0.53476131]
Actual=[ 0.53523338], Predicted=[ 0.46761405]
Actual=[ 0.65492014], Predicted=[ 0.52468097]
Actual=[ 0.76912519], Predicted=[ 0.69778967]
Actual=[ 0.46048429], Predicted=[ 0.60769069]
Actual=[ 0.46959711], Predicted=[ 0.42852136]
Actual=[ 0.21539155], Predicted=[ 0.34208402]
Actual=[ 0.], Predicted=[ 0.26035941]
Actual=[ 0.13239207], Predicted=[ 0.24991632]
Actual=[ 0.46959711], Predicted=[ 0.47271478]
Actual=[ 1.], Predicted=[ 0.89775062]
Actual=[ 0.83362648], Predicted=[ 0.63735306]
Actual=[ 0.32534158], Predicted=[ 0.52253145]
Actual=[ 0.11993405], Predicted=[ 0.37450719]
Actual=[ 0.4378609], Predicted=[ 0.34567273]
Actual=[ 0.16421226], Predicted=[ 0.31127638]
Actual=[ 0.6469186], Predicted=[ 0.61670732]
Actual=[ 0.53523338], Predicted=[ 0.51513314]
Actual=[ 0.2383694], Predicted=[ 0.32859772]
Actual=[ 0.37921535], Predicted=[ 0.31516165]
Actual=[ 0.80392839], Predicted=[ 0.88873386]
Actual=[ 0.71286399], Predicted=[ 0.66584396]
Actual=[ 0.35068934], Predicted=[ 0.40836704]
Actual=[ 0.68768676], Predicted=[ 0.57944453]
```

Figure 9: Distribution of Actual and Predicted Values

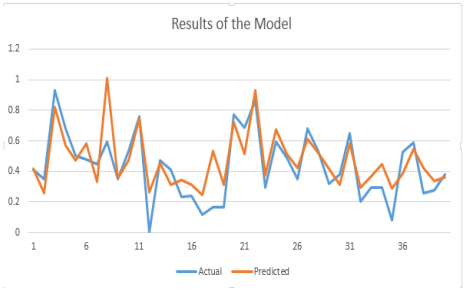


Figure 10: Probability of Insomnia vs. Average Hours of Sleep

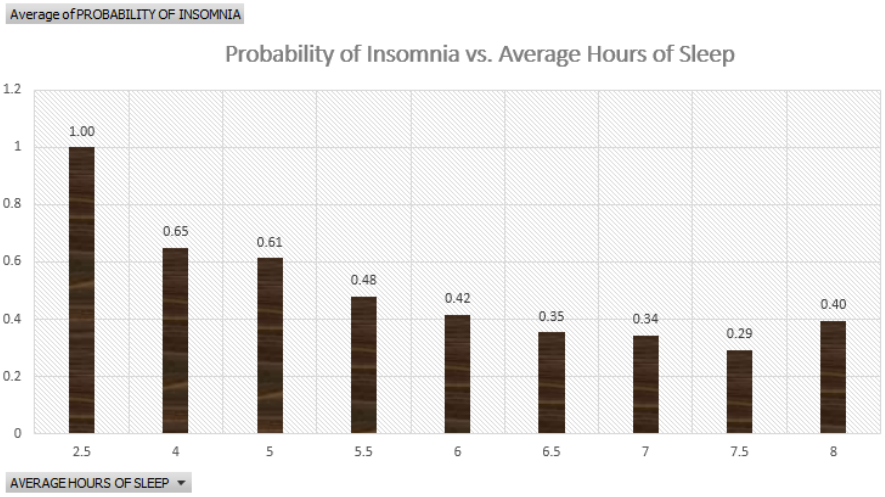


Figure 11: Interference with Daily Functioning vs Probability of Insomnia