Advertising Dataset Analysis Report

This assignment consisted of analyzing the advertising dataset to predict whether a user will click on an online advertisement based on various factors. The dataset contained information such as daily time spent on site, age, area income, daily internet usage, ad topic line, city, gender, country, timestamp, and whether the user clicked on the ad.

Model Performance:

Below are the ANN classification model results:

- Accuracy: 0.77
- Precision: 0.911
- Recall: 0.6486
- F1 Score: 0.7508
- ROC AUC Score: 0.8901

Analysis and Insights:

The accuracy of 0.77 was an increase from the original value I had received by running 500 epochs compared to my previous attempt of 100 epochs. The score indicated that the model accurately predicted 77% of the instances suggesting its ability to predict whether a user will click on an online advertisement.

The precision score of 91.1% suggests that there is a low case of false positives, meaning that the model's ability to screen an individual as a good candidate for an ad would then result in the individual engaging with the advertisement.

The recall suggests that only 64.86% of the time the model was able to identify users who actually clicked on the online advertisement. The model will need to be fine tuned to increase the recall rate.

The F1 Score of 0.7508 indicates that there is room for improvement in the model when it comes to its ability to identify individuals who would click on advertisements. A higher F1 score would indicate a better balance between precision and recall, suggesting that the model is performing well in identifying positive instances while minimizing false predictions.

(Receiver Operating Characteristic Area Under the Curve) score is a metric that measures the model's ability to discriminate between positive and negative instances. The score of 0.8901

indicates that the model has a good ability to distinguish between positive and negative instances.

Conclusion:

Although there are some aspects of the model that are able to be finetuned further through feature engineering, the ANN classification model produced results that can predict whether a user will click on an online advertisement based on various factors.