Troy Sabia

C964

Task D – Documentation

1. a business vision or business requirements document

“The business vision is to provide a niche streaming service that guarantees genre authenticity for metal fans. To achieve this, the data product must automatically classify incoming audio as metal or non-metal with at least 90% accuracy, operate efficiently at scale, and reduce reliance on manual curation. These requirements align the technical product with the strategic goal of brand credibility, user retention, and cost efficiency.”

4. assessment of the hypotheses for acceptance or rejection

The project hypothesis is that a convolutional neural network trained on MFCC features can classify audio clips as metal or non-metal with at least 90% accuracy. The hypothesis will be accepted if the trained model achieves ≥90% accuracy on the test set with validation and test metrics within a 5% variance, demonstrating generalization. If the model fails to meet this benchmark or shows signs of overfitting, the hypothesis will be rejected and revised approaches such as larger datasets or alternative architectures will be considered.

6. assessment of the product’s accuracy

Testing has shown that the final optimized algorithm has an accuracy of over 94% on the test set, with a 2% false positive and 2.4% false negative in the confusion matrix (see Task-D-test-revise-optimize.docx). This is sufficient for business purposes.