

Week 5: Final Model Refinement & Deployment Preparation

Task 1: Further Model Fine-Tuning (Tai)

Steps:

- Analyze misclassified samples from the Week 4 evaluation report.
- Experiment with data augmentation techniques.
- Fine-tune feature selection using additional transformations.
- Train updated models and compare performance.
- Save best-performing feature set as data/final_training_data.csv.
- Upload updated dataset to GitHub.

Files:

- data/optimized_features.csv
- data/final_training_data.csv (**new file**)

Task 2: Train the Final Model (James)

Steps:

- Load data/final_training_data.csv from GitHub.
- Train models using different techniques
- Compare performance metrics and choose the best approach.
- Save the final trained model as **models/final_model.pkl**.
- Upload the final model to GitHub.

Files:

- data/final_training_data.csv
- models/final_model.pkl (**new file**)

Task 3: Model Deployment & Testing (Kyle & Wissam)

Steps:

- Load models/final_model.pkl and test it with real speech samples.
- Convert the model to a deployable format
- Test model inference speed and accuracy on new audio data.
- Document results in results/deployment_evaluation.txt.
- Upload deployment-ready model and results to GitHub.

Files:

- models/final_model.pkl
- models/deployable_model.onnx (**or another chosen format**)

- results/deployment_evaluation.txt