Model Optimization and Tuning Phase Template

Date	15 March 2024
Team ID	739724
Project Title	Analysis of amazon cell phone reviews
Maximum Marks	10 Marks

Model Optimization and Tuning Phase

The Model Optimization and Tuning Phase involves refining neural network models for peak performance. It includes optimized model code, fine-tuning hyperparameters, comparing performance metrics, and justifying the final model selection for enhanced predictive accuracy and efficiency.

Hyperparameter Tuning Documentation (8 Marks):

Model	Tuned Hyperparameters
Model	-

Final Model Selection Justification (2 Marks):

Final Model	Reasoning

Model	Keras, a high-level neural network API, is used in this project to build and train a **sentiment analysis model** for Amazon cell phone reviews. It simplifies the process of creating deep learning models with its intuitive interface. Key steps include: 1. **Text Tokenization and Embedding:** Keras's Tokenizer is used to preprocess text data by converting reviews into numerical sequences. The Embedding layer maps words into dense vector representations, capturing semantic relationships. 2. **Model Architecture:** A sequential model is created using layers such as: o **Embedding Layer:** For word embeddings. o **LSTM/GRU Layers:** To capture the context and sequence of words in reviews. o **Dense Layers:** For classification into sentiments like positive, negative, or neutral. 3. **Training and Validation:** The model is trained using labeled review data with Keras's easy-to-use fit() method, optimizing for accuracy through loss functions like binary_crossentropy or categorical_crossentropy. 4. **Evaluation:** The trained model is tested on unseen review data to predict sentiment and provide insights into customer feedback trends.