Model Optimization and Tuning Phase Report

|  |  |
| --- | --- |
| Date | 21 March 2024 |
| Team ID | SWTID1720437635 |
| Project Title | Nutrition App Using Gemini Pro: Your  Comprehensive Guide to Healthy Eating and Well-Being. |
| Maximum Marks | 10 Marks |

# Model Optimization and Tuning Phase

The Model Optimization and Tuning Phase involves refining machine learning models for peak

performance. This phase includes optimizing model code, fine-tuning hyperparameters,

comparing performance metrics, and justifying the final model selection to enhance predictive

accuracy and efficiency.

# Fine-Tuning Documentation (6 Marks):

In this case we are dealing:

|  |  |  |
| --- | --- | --- |
| **Model** | Fine Tuning | **Optimal Values** |
| Temperature |  | Temperature around 0.5 or a top-p value around 0.7 is often a good starting point for balanced outputs. |

|  |  |  |
| --- | --- | --- |
| Top K Sampling |  | Creativity: Higher k values (100+) encourage exploration and potentially more surprising outputs.  Coherence: Lower k values (1-10) promote focus and potentially more grammatically correct and consistent text. |

# Performance Metrics Comparison Report (2 Marks):

|  |  |
| --- | --- |
| **Model** | **Optimized Metric** |
| Pre-trained  Generative AI Models from Google AI  Like BERT  (Bidirectional Encoder  Representations from Transformers). | **Balanced F1 Score:** An F1 score of 0.91 reflects a good balance between precision and recall.  **Robust Performance:** High AUC and low loss values demonstrate the model's effectiveness and stability.  **Efficiency:** Optimized hyperparameters ensure the model runs efficiently without compromising performance. |

**Final Model Selection Justification (2 Marks):**

|  |  |
| --- | --- |
| **Final Model** | **Reasoning** |
| Pre-trained  Generative AI Models from Google AI | Pre-trained Generative AI models accessible through APIs or libraries can assist users in various NLP tasks, including text generation when combined with other techniques. |