# Model Optimization and Tuning Phase Template

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| Date | 18 Feburary 2026 |
| Team ID | LTVIP2026TMIDS79636 |
| Project Title | AutoSage App Using Gemini Flash |
| Maximum Marks | 10 Marks |

## Model Optimization and Tuning Phase

The Model Optimization and Tuning Phase in the **AutoSage** project focuses on improving the quality, clarity, and reliability of AI-generated vehicle information. Since **AutoSage** uses a pre-trained Generative AI model, optimization is achieved through prompt refinement, response structuring, and inference configuration rather than traditional neural network training.

## Hyperparameter Tuning Documentation (8 Marks):

| Model | Tuned Hyperparameters |
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| Gemini 2.5 Flash | **Temperature:** Set to a balanced value to ensure the generated vehicle details are clear and factual without unnecessary creativity.<br><br>**Top-p:** Used to control token selection so that the responses remain relevant and consistent.<br><br>**Top-k:** Helps limit token choices to avoid irrelevant or incorrect vehicle information.<br><br>**Max Output Tokens:** Configured to ensure all required vehicle details such as brand, mileage, price, and resale value are generated completely. |

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| | **Response Format:** Set to structured plain text for easy display in the Streamlit user interface. |

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

| Final Model | Reasoning |
|---|---|
| **Gemini 2.5 Flash** *(models/gemini-2.5-flash)* | The Gemini 2.5 Flash model is selected due to its fast response time, strong multimodal capabilities, and efficient handling of image and text inputs. It provides accurate and structured vehicle information in real time and integrates seamlessly with the Streamlit application, making it well-suited for the AutoSage project. |