

Model Optimization and Tuning Phase Template

Date	15 July 2024
Team ID	SWTID1719942077
Project Title	CareerMapper
Maximum Marks	10 Marks

Model Optimization and Tuning Phase

The Model Optimization and Tuning Phase involves refining machine learning 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 (6 Marks):

Model	Tuned Hyperparameters	Optimal Values
Temperature	<pre>def generate_career_pathways(user_data): Personal Information: [age:22, gender:male, educational level:UG], Interests: [Hobbies:Playing football, coding, Maths], Skills: [Skills:C++,Pytorch, ML], Career choices: 1. Software Development • Leverage Skills: Your proficiency in C++ and Python provides a strong foundation for roles in software development. • Potential Roles: You can explore roles like software engineer, backend developer, or data analyst. • Growth Opportunities: The software development field offers ample growth and learning opportunities. 2. Machine Learning Engineer • Build on Strengths: Your knowledge of PyTorch and ML is directly applicable to roles in machine learning engineering. • Industry Demand: Machine learning is a rapidly growing field with high demand for skilled professionals. • Potential Roles: You could work on developing ML models for various applications, such as recommendation systems or image recognition. 3. Academic Research • Explore Further: If you have a deep interest in mathematics or machine learning, pursuing a research degree could be a great path. • Potential Roles: You could work as a research assistant or pursue a career in academia, contributing to the advancement of knowledge. role:Query,content: Personal Information: [age:{user_data[0]}, gender:{user_data[1]}, educational level:{user_data[2]}, Interests: {user_data[3]}, Skills: {user_data[4]}] """ response = palm.generate_text(model=model_name, prompt=prompt) return response.result</pre>	Temperature around 0.5 or a top-p value around 0.7. This is often a good starting point for balanced outputs.
Top K Sampling	<pre>def generate_career_pathways(user_data): Personal Information: [age:22, gender:male, educational level:UG], Interests: [Hobbies:Playing football, coding, Maths], Skills: [Skills:C++,Pytorch, ML], Career choices: 1. Software Development • Leverage Skills: Your proficiency in C++ and Python provides a strong foundation for roles in software development. • Potential Roles: You can explore roles like software engineer, backend developer, or data analyst. • Growth Opportunities: The software development field offers ample growth and learning opportunities. 2. Machine Learning Engineer • Build on Strengths: Your knowledge of PyTorch and ML is directly applicable to roles in machine learning engineering. • Industry Demand: Machine learning is a rapidly growing field with high demand for skilled professionals. • Potential Roles: You could work on developing ML models for various applications, such as recommendation systems or image recognition. 3. Academic Research • Explore Further: If you have a deep interest in mathematics or machine learning, pursuing a research degree could be a great path. • Potential Roles: You could work as a research assistant or pursue a career in academia, contributing to the advancement of knowledge. role:Query,content: Personal Information: [age:{user_data[0]}, gender:{user_data[1]}, educational level:{user_data[2]}, Interests: {user_data[3]}, Skills: {user_data[4]}] """ response = palm.generate_text(model=model_name, prompt=prompt) return response.result</pre>	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.
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Performance Metrics Comparison Report (2 Marks):

Model	Optimized Metric
Pre-trained Generative AI Models from Google AI Like BERT (Bidirectional Encoder Representations from Transformers).	

Final Model Selection Justification (2 Marks):

Final Model	Reasoning
Pre-trained Generative AI Models from Google AI	The pre-trained Generative AI models accessible through APIs or libraries can help the user to convert various NLP tasks, potentially including text generation when combined with other techniques.