Model Development Phase Template

Date	10 JULY 2024
Team ID	SWTID1720111029
Project Title	Unveiling Climate Change Dynamics through Earth Surface Temperature Analysis
Maximum Marks	5 Marks

Model Selection Report

In the model selection report for future deep learning and computer vision projects, various architectures, such as CNNs or RNNs, will be evaluated. Factors such as performance, complexity, and computational requirements will be considered to determine the most suitable model for the task at hand.

Model Selection Report:

Model	Description
Model 1 **(RNN)**	Recurrent Neural Networks (RNNs) are widely used for sequential data tasks due to their ability to maintain context across time steps. They are relatively simple in architecture. **Performance:** RNNs excel at sequential data but face challenges in long-term dependencies, vanishing/exploding gradients, computational expense, and hyperparameter sensitivity. **Computational Requirements:** Low **Issue:** Standard RNNs often struggle with long-term dependencies, leading to performance degradation on tasks requiring extensive context retention.

Model 2 **(GRU)**	Gated Recurrent Units (GRUs) are an improvement over standard RNNs, addressing some of their limitations by incorporating gating mechanisms to better capture dependencies in sequences. **Performance:** Offer faster training and require fewer parameters for comparable performance than RNN **Computational Requirements:** GRUs are more computationally efficient than LSTMs, making them suitable for scenarios with limited resources. **Issue:** While they offer improved performance over basic RNNs, they may still fall short in handling very long-term dependencies as effectively as LSTMs.
Model 3 **(LSTM)**	Long Short-Term Memory Networks (LSTMs) are the most advanced and effective architecture for sequence modeling tasks. **Performance:** By utilizing specialized gates to regulate information flow, LSTMs excel in capturing long-term dependencies without suffering from the vanishing gradient problem **Computational Requirements:** complex and resource-intensive However, Their superior performance and ability to manage extensive context make them the best option for tasks requiring deep temporal understanding.