**Model Optimization and Tuning Phase Template**

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| Date | 15 March 2024 |
| Team ID | SWTID1720707508 |
| Project Title | WarLens: Transfer Learning for Event Classification in Conflict Zones |
| 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):

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| **Model** | **Tuned Hyperparameters** | **Optimal Values** |
| Model 1 | Learning rate,Batch size,epoch | 0.001,32,20 |
| Model 2 | Learning rate,Batch size,epochs | 0.001,32,20 |
| Model 3 | Learning rate,Batch size,epochs | 0.001,32,20 |
| Model 4 | Learning rate,Batch size,epochs, | 0.001,32,20 |
| Model 5 | Learning rate,Batch size,epochs | 0.001,32,20 |
| Model 6 | Learning rate,Batch size,epochs | 0.001,32,20 |

### Performance Metrics Comparison Report (2 Marks):

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| **Model** | **Baseline Metric** | **Optimized Metric** |
| Model 1 | 0.50,0.50,0.45,0.47 | 0.89,0.89,0.89,0.89 |
| Model 2 | 0.15,0.15,0.14,0.15 | 0.50,0.45,0.48,0.46 |
| Model 3 | 0.20,0.14,0.18,0.18 | 0.85,0.84,0.84,0.84 |
| Model 4 | 0.20,0.14,0.16,0.15 | 0.80,0.75,0.70,0.72 |
| Model 5 | 0.15,0.10,0.12,0.11 | 0.80,0.75,0.70,0.72 |
| Model 6 | 0.10,0.10,0.10,0.10 | 0.85,0.78,0.77,0.77 |

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

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| **Final Model** | **Reasoning** |
| Model 6 | This model was chosen due to best accuracy, response time is less and loss is less, it is very fast and is optimized. |