

# A New Process Model for the Comprehensive Management of Machine Learning Models Synthesis

The article presents a new process model for comprehensive management of machine learning models. In the introduction the article presents the context and the need for a new management model for machine learning models by highlighting the growing importance of artificial intelligence and machine learning in business decision-making processes by highlighting the challenges posed by the effective management of these technologies. The main objective is to introduce a structured framework for the complete management of machine learning models, from creation to retirement, in order to optimize their performance and alignment with business objectives. Complete management of machine learning models presented has six key steps:

**1. Plan Model:** Define business requirements and evaluate feasibility.

This step is crucial to ensure that the model will meet the needs of the organization and to identify the resources needed for its implementation, including data, technical skills, and budget. It also involves defining the objectives of the model, its key performance indicators (KPIs), and planning its integration into existing business processes.

**2. Build and Test Model:** Construct the model and assess its performance.

This phase focuses on data preparation, training the model, and evaluating its performance using techniques like cross-validation to ensure its reliability and suitability for predefined requirements. This is an essential step to refine the model before deployment.

**3. Deploy Model:** Place the model into the operational environment.

This phase involves integrating the machine learning model into the operational environment for real-world use. This phase is crucial to ensure that the model works properly in real-world conditions and meets business requirements, marking the transition from the testing phase to active application.

**4. Use & Monitor Model:** Implement and continuously monitor the model's performance.

This phase includes the use and continuous monitoring of the model in a real environment. This involves monitoring its performance to identify any drops in accuracy or changes in data that could affect its effectiveness, allowing adjustments and improvements to maintain its relevance and effectiveness.

**5. Rebuild and Test Model:** Update the model with new data or changes and re-test.

This phase includes updating and readjusting the model to adapt to new data or requirements. This involves collecting new information, evaluating, and adjusting the performance of the model, thus ensuring its relevance and effectiveness over time.

**6. Retire Model:** Conclude the model's lifecycle when no longer useful or feasible.

This phase deals with the end of life of a model. It highlights the importance of removing models that are no longer useful or whose performance has significantly declined. This step involves evaluating the models based on their current relevance, effectiveness, and accuracy. When a model is retired, it is crucial to document the reasons for this decision and retain lessons learned for future modeling projects.

Key points include the importance of planning and continuous monitoring for model accuracy, the need for update and upgrade loops to adapt to changing environments, and the management of model versions throughout its lifecycle.