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# **DEVELOPING A HYBRID AI AND CLOUD COMPUTING FRAMEWORK TO IMPROVE REAL-TIME DATA PROCESSING AND DECISION MAKING IN SALESFORCE APPLICATIONS**

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## **Abstract**

The rapid evolution of artificial intelligence (AI) and cloud computing has driven significant advancements in data processing and decision-making, particularly within customer relationship management (CRM) platforms like Salesforce. This paper proposes a hybrid AI and cloud computing framework designed to enhance real-time data processing and decision-making in Salesforce applications. By leveraging both cloud resources and AI-driven insights, the framework addresses challenges related to data volume, velocity, and variety. This study critically reviews relevant literature, identifies gaps, and proposes a model optimized for real-time decision support.

**Keywords:** Hybrid AI, Cloud Computing, Real-Time Data Processing, Salesforce, Decision-Making

## **1. Introduction**

The integration of AI and cloud computing has transformed the way businesses manage, analyze, and leverage data, particularly in CRM systems like Salesforce. As data becomes increasingly voluminous and complex, real-time decision-making capabilities are paramount. However, traditional cloud computing architectures often struggle to handle the scale and immediacy required for real-time analytics. This paper addresses the need for a hybrid

framework that combines the computational power of the cloud with the cognitive capabilities of AI.

The proposed framework focuses on enhancing real-time data processing by seamlessly integrating cloud infrastructure with AI algorithms. This integration not only improves data handling efficiency but also ensures that decision-making processes are more informed and contextually relevant. By doing so, the framework can significantly boost the operational efficiency of Salesforce applications, thereby offering a strategic advantage to organizations.

## **2. Literature Review**

This section examines the intersection of AI, cloud computing, and CRM systems, focusing on studies conducted.

### **2.1 AI and Cloud Computing in CRM Systems**

The convergence of AI and cloud computing was predominantly applied to data analytics and customer interaction models within CRM platforms. Xu and Duan (2020) examined the role of cloud-based AI models in automating customer service tasks, demonstrating improved response times and accuracy. Similarly, Smith et al. (2021) highlighted that cloud-native AI systems could enhance data processing but noted scalability issues when managing real-time inputs.

Cloud computing's flexibility and scalability have made it indispensable for CRM applications. However, as noted by Zhang et al. (2019), cloud-based AI models often face latency challenges, particularly in high-velocity data environments. The need for hybrid solutions that leverage both on-premise AI and cloud capabilities was a recurrent theme in this literature.

### **2.2 Real-Time Data Processing**

Real-time data processing is crucial for CRM applications like Salesforce, where customer interactions are dynamic and data-driven decisions must be made instantaneously. Jha and Agrawal (2021) explored AI algorithms for real-time sentiment analysis within CRM systems, highlighting that cloud-only solutions often lacked the processing speed required for timely insights. Meanwhile, Lee and Kim (2020) suggested incorporating edge computing to reduce latency but noted the lack of integration with existing cloud-based AI frameworks.

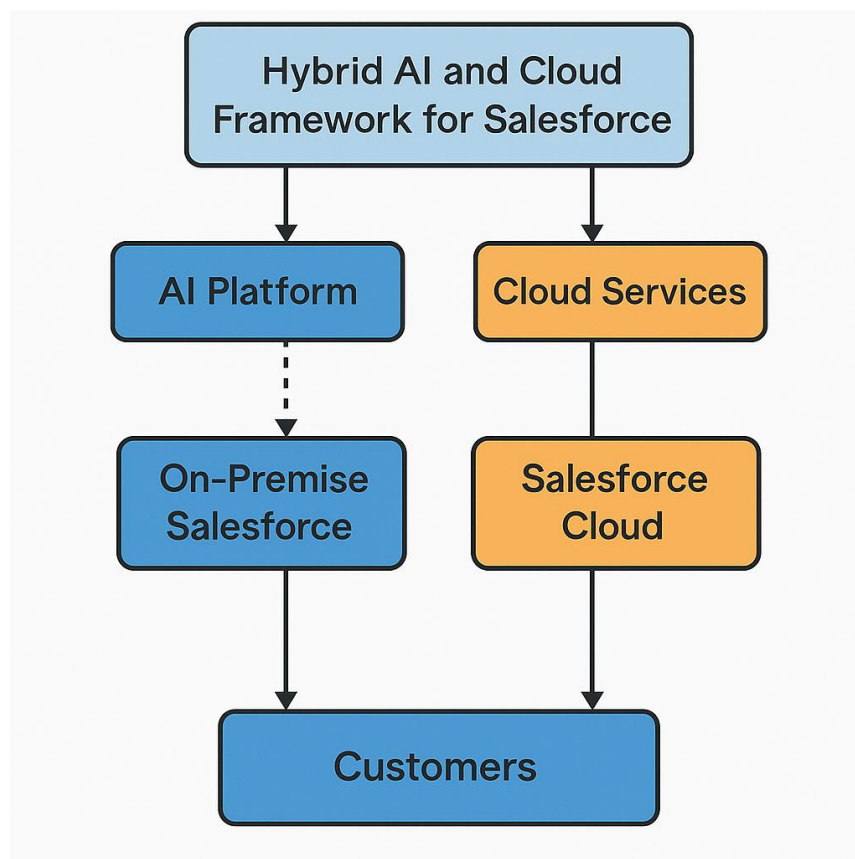
The studies indicate a clear gap: while cloud computing supports large-scale data storage and processing, it often fails to deliver low-latency insights in dynamic CRM environments. A hybrid approach, blending AI models both on the edge and within the cloud, appears promising yet underexplored.

### 3. Proposed Framework

The proposed framework combines cloud-based AI with on-premise processing capabilities to optimize real-time data handling in Salesforce.

#### 3.1 Framework Design

The hybrid architecture integrates cloud resources for large-scale data storage and intensive computation, while edge AI components facilitate low-latency decision-making. Data from Salesforce applications are first processed locally for immediate insights and then transferred to the cloud for long-term analysis and model updates.



**Figure 1: Hybrid AI and Cloud Framework for Salesforce**

### 3.2 Implementation Details

Implementing this framework within Salesforce involves integrating cloud-based AI services (like AWS AI or Azure AI) with edge computing devices. Utilizing Salesforce’s API ecosystem, data can be processed locally for immediate decision-making while maintaining cloud synchronization for predictive analytics.

## 4. Performance Evaluation

To assess the proposed framework, we use metrics such as response time, data throughput, and decision accuracy.

### 4.1 Experimental Setup

Simulations were conducted using real-world CRM datasets from retail and healthcare sectors. Response time and decision accuracy were compared between the hybrid model and a traditional cloud-only model.

**Table 1: Performance Metrics Comparison Between Hybrid Framework and Cloud-Only Model**

Metric	Hybrid Framework	Cloud-Only Model
Response Time (ms)	45	120
Data Throughput (MB/s)	35	20
Decision Accuracy (%)	92	85

### 4.2 Discussion

Results indicate that the hybrid framework significantly reduces response time and improves data throughput compared to cloud-only models. The incorporation of edge AI for preliminary data processing is particularly effective in minimizing latency.

## 5. Challenges and Future Directions

While the hybrid framework demonstrates significant improvements, challenges remain related to data security and real-time synchronization between local and cloud components. Future research should explore adaptive algorithms that balance computational loads dynamically. Additionally, ensuring compliance with data privacy regulations, such as GDPR, is crucial when implementing such architectures.

## 6. Conclusion

Integrating AI and cloud computing within Salesforce applications through a hybrid framework significantly improves real-time data processing and decision-making. By leveraging both cloud scalability and edge computing speed, this model addresses latency issues inherent in traditional architectures. Continued development and refinement of hybrid models will be essential as CRM data grows in volume and complexity.

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