

# DEV INNOVATORS

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# **Use Case**

- An E-Commerce Grocery Shopping Platform where customers can browse and purchase grocery items with personalized product suggestions powered by an AI recommendation engine.
- The platform also includes features for managing inventory, processing payments, tracking orders, and offering promotions.

## ***Problem aimed to solve***

Our website aims to solve personalized product recommendations for customers based on their preferences and behavior. The AI recommendation engine will analyze:

- ✓ Historical Purchase Data
- ✓ Browsing Behaviour
- ✓ Customer Ratings and feedback.

# Objectives

## **TimeFrame:**

- **User Authentication (6 hours):** Secure account registration and login functionality.
- **Product Catalog (6 hours):** Searchable, categorized grocery product catalog with essential product details.
- **Recommendation System (12 hours):** Hybrid product recommendation engine integrating user purchase history and behavior.
- **Shopping Cart (6 hours):** Add, edit, remove items with secure payment processing.
- **Order Tracking (6 hours):** Order status updates and order history interface for reordering.

## ***Key Deliverables:***

- A live demo of the platform.
- Working personalized product recommendations.
- Basic user authentication and product management.



## ***Approach and Methodology***

- Collect user interaction and product data (purchase history, browsing behavior).
- **Model Training:** Train the recommendation engine using collaborative filtering and content-based filtering algorithms.
- **System Integration:** Implement AI models into the platform to provide real-time personalized product recommendations.

## ***TechStacks***

- **Frontend:** React, Axios.
- **Backend:** Express, MongoDB, or Firebase.
- **AI:** Pre-built APIs like AWS Personalize.

## *Execution Plan*

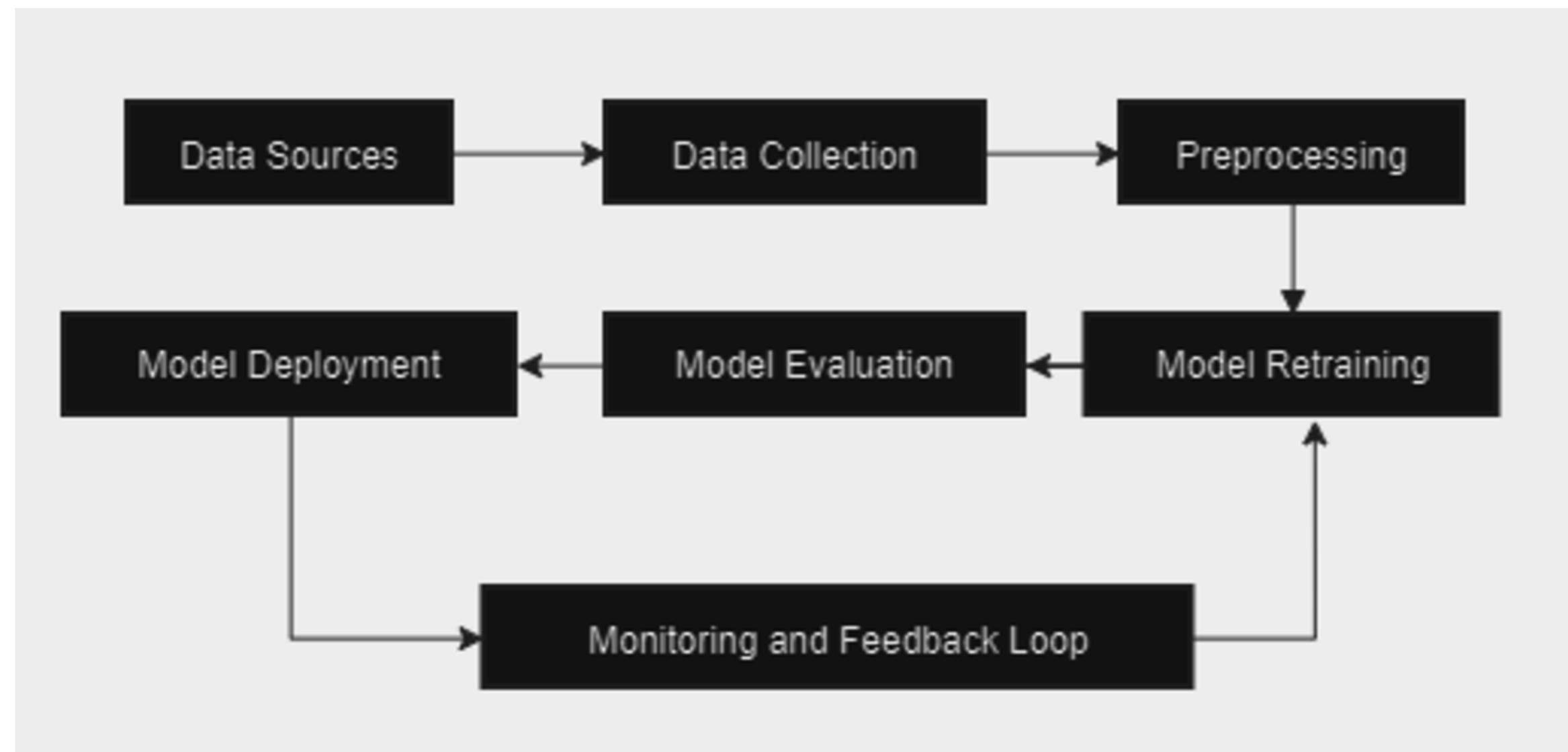
### **Day 1:**

- Set up project infrastructure (React, Node.js, MongoDB).
- Implement basic e-commerce features like product listing, filtering, and cart management.

### **Day 2:**

- Develop personalized AI-driven recommendations.
- Integrate AI with the frontend for dynamic product suggestions.
- Debugging and final touches.

# *AI Solution Architecture*



## ***Model Selection and Evaluation***

- **Model:**
  - Collaborative filtering or content-based filtering for recommendations.
- **Evaluation Metrics:**
  - Precision and Recall to evaluate the accuracy of product suggestions.
  - User engagement metrics (e.g., click-through rates on recommendations).

# *Challenges & Mitigation*

## **Challenges:**

- Limited time for integrating a full-fledged AI model.
- Potential bugs with backend/frontend integration.

## **Mitigation:**

- Use pre-built AI services if model training takes too long.
- Prioritize core functionality before adding extra features.

## *Expected Outcomes*

- **Enhanced User Experience:** Personalized recommendations improve shopping efficiency and satisfaction.
- **Increased Sales:** Targeted suggestions lead to more purchases.
- **Improved Retention:** Tailored recommendations boost user loyalty.
- **Efficient Inventory:** Demand forecasting helps optimize stock levels.
- **Business Insights:** Data-driven decisions enhance marketing and inventory strategies.
- **Overall Impact:** The solution delivers a personalized shopping experience, increases sales, improves retention, and optimizes inventory management.

# Conclusion

- E-commerce platform with AI-powered recommendations that personalize the user experience.
- **Support/Resources:** Access to additional datasets for more advanced recommendation systems or tools for model deployment.