HackFusion 3

Problem Statement: AI-Driven Agentic Ordering & Autonomous Pharmacy System

Background:

Pharmacies worldwide are facing increasing pressure to manage medicine ordering, inventory forecasting, and customer interaction efficiently. Traditional pharmacy systems rely heavily on manual processes, fixed ordering cycles, and search-based online ordering, which fail to reflect real patient behavior—especially for chronic medication users.

Mediloon is building the future of autonomous pharmacies by introducing an AI-driven ecosystem that can understand, predict, and automate medicine ordering using agentic AI systems. This approach reduces pharmacist workload, improves customer safety, and ensures timely medicine availability.

Problem:

Current digital pharmacy platforms lack agentic intelligence. Customers must manually search and reorder medicines, pharmacies cannot predict consumption accurately, and backend ordering workflows require human intervention.

There is no unified system that:

- Understands medicine orders via natural voice/text conversation
- Predicts when medicines will run out
- Automatically prepares refill or procurement workflows

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- Uses multi-agent systems to manage end-to-end pharmacy operations

This leads to inefficiencies, missed refills, overstocking, and increased operational burden.

Proposed Solution:

Develop an AI Agentic Ordering System that autonomously manages pharmacy ordering using voice/text assistants, predictive intelligence, and multi-agent automation.

The system will allow customers to speak or type medicine names, automatically add them to cart, predict refill needs, and trigger backend procurement workflows using intelligent agents and MCP tools (n8n, Zapier, APIs).

Key Features & Functionalities

1. Voice / Text Ordering Assistant (Customer-Facing)

- Natural language ordering via voice or text
- Multi-language support (English, German; Arabic optional)
- Intelligent parsing of medicine names and quantities
- Multi-turn conversation capability
- Confirmation of alternatives and variants
- Prescription validation logic
- Automatic cart creation with order summary

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2. Predictive Ordering Engine

- Learns from previous customer orders
- Optional onboarding questionnaire for first-time users
- Identifies medicine consumption frequency
- Calculates depletion dates
- Auto-suggests refills via notification or pop-up
- Visualizes prediction timelines for transparency

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3. Agentic Automation System (Back-Office Core)

Multi-agent architecture using LangChain / LangGraph:

- Ordering Agent: Assists customers during ordering
- Forecast Agent: Predicts medicine refill or store stock needs
- Procurement Agent: Prepares purchase orders automatically
- Safety Agent: Checks prescription requirements and interactions

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4. MCP & Workflow Automation Integration

- MCP tools integration for real-world execution
- Zapier: Send orders via Email / SMS / WhatsApp
- n8n: Trigger distributor or supplier API calls
- Webhooks: Update Mediloon CMS and shopping cart

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5. Centralized CMS & Website Integration

- Seamless integration with Mediloon CMS
- Real-time cart updates from AI agents
- Inventory synchronization
- Order confirmation and fulfillment tracking

Expected Impact:

- ☑ Autonomous Pharmacy Operations: Minimal human intervention
- ☑ Improved Patient Safety: Timely refills and prescription checks
- ☑ Higher Efficiency: Reduced pharmacist workload
- ☑ Better Customer Experience: Human-like AI interaction
- ☑ Predictive Intelligence: Prevents stock-outs and missed refills

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