Marika: Multi-Agent AI System for patient support

Multi Agent Response Integration Knowledge–based Accompaniment

MedAI   NutriAI   PsyAI   Coordinator

The Problem: Static Therapies in a Dynamic World

Currently, healthcare systems **focus** heavily on **diagnosis and treatment prescription**, but often **fail to provide adequate, continuous support** for patients to follow complex treatment regimens

These therapies frequently demand significant **changes in lifestyle, habits, and diet**.

This overwhelming burden, coupled with communication gaps (patients often hide difficulties), leads to high dropout rates and reduced therapeutic effectiveness
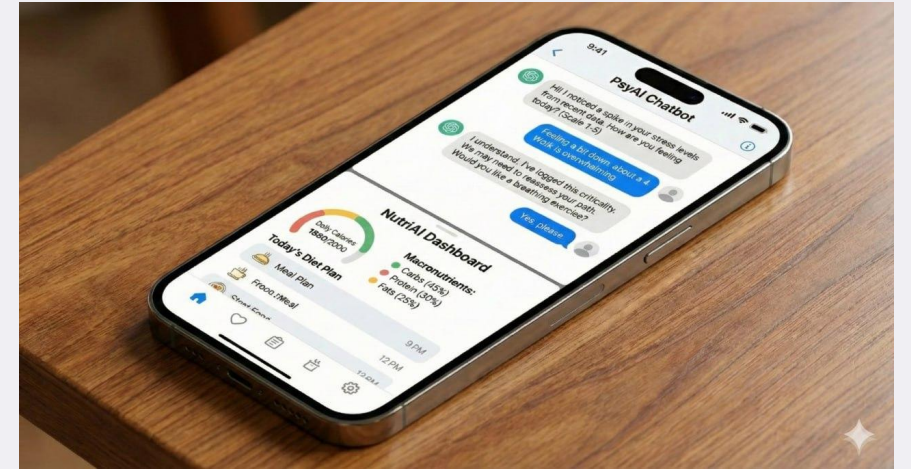

Therapy Abandonment

What the user needs

Patients need a **proactive, empathetic, and autonomous digital assistant** that monitors their overall well-being regarding:

- physical
- nutritional
- mental health

Then it adapts their daily plan to **maximize adherence** to the prescribed treatment while **minimizing psychological distress**.

Continuous Monitoring:
The Clinical Digital Twin

Marika

Wearable Integration:

Real-time vital parameter monitoring with smartwatches or dedicated devices.

Wellness Scale:

Daily emotional feedback (1-5).

Progression monitoring:

Automatic processing of the results to determine how the therapy is going.

2-4 Hour Detection:

Significant clinical variations trigger immediate alerts.
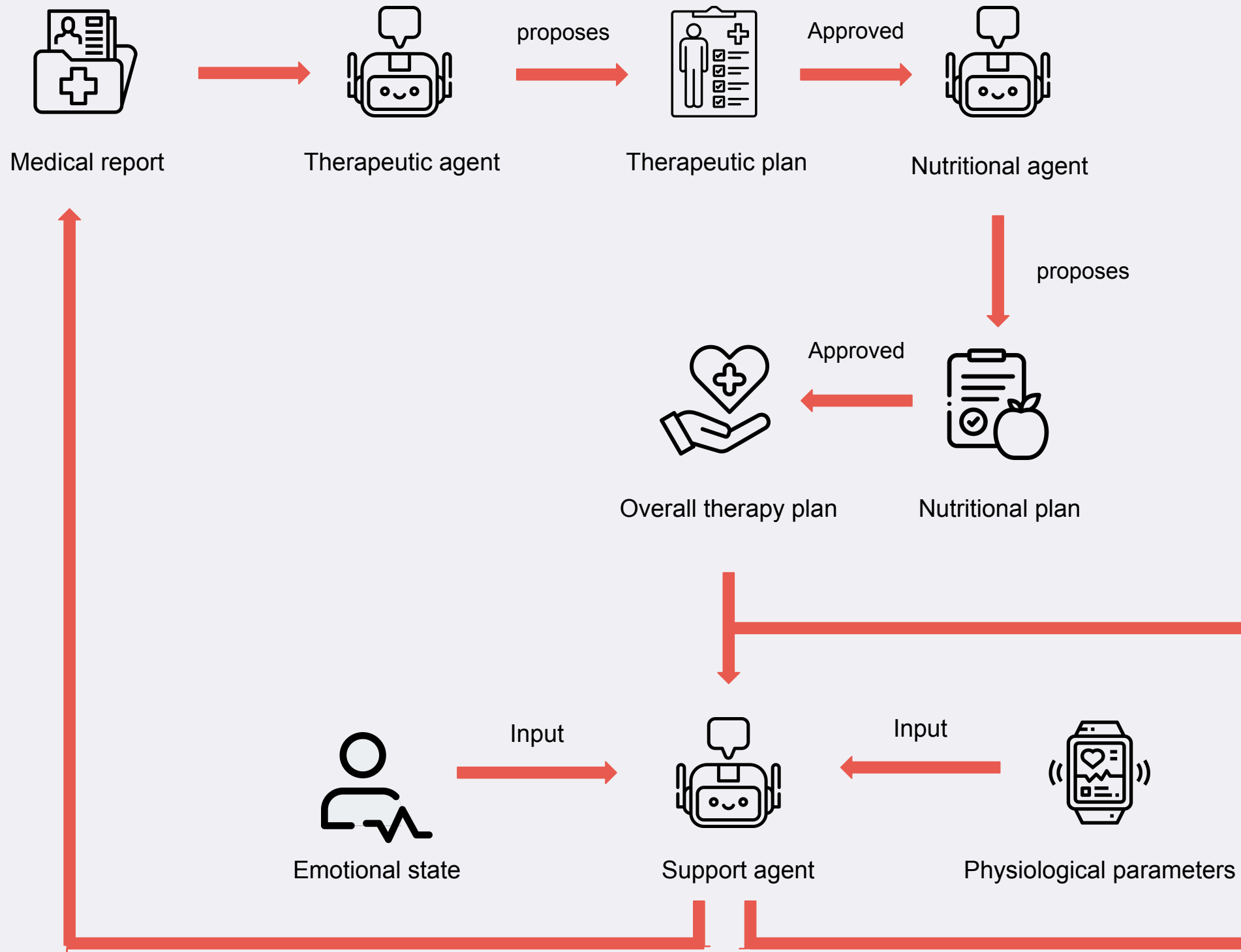
Mood Analysis

Sleep Patterns

Physical conditions

Diet feedbacks

Therapy feedbacks

Medical report → Therapeutic agent —proposes→ Therapeutic plan —Approved→ Nutritional agent —proposes→ Nutritional plan —Approved→ Overall therapy plan

Emotional state —Input→ Support agent ←Input— Physiological parameters

Use Case: Maria, Type 2 Diabetes Patient

Day 1
Personalized plan

Day 5
Alert triggered

Adjustment
Plan modified

Day 7
Outcome improved

Maria, 54, type 2 diabetic. During her therapy at day 5 the smartwatch detects high levels of sugars in the blood and disturbed sleep. The system recognise the gravity of the situation, an **alert is triggered** and the system immediately notifies the doctor. The diabetologist is able to adjust the plan in a very short time, thanks to the knowledge of Maria's parameters, how she is responding to the cure and thanks to the support of our agents.

Use Case: Maria, Type 2 Diabetes Patient

Day 1
Personalized plan

Day 14
Minor problem

Adjustment
Plan modified

Day 15
Outcome improved

Maria, 54, type 2 diabetic. During her therapy at day 14 in the daily report she accuses of always feeling **very tired** after training and the smartwatch detects low sugar levels. The agent then suggests her to:

- **change her training routine** in order do more frequent but shorter workouts

- take a **short nap** before training in order to feel less tired

Security & Ethics: Human Primacy

Patient privacy — Patient's info must be kept private

Transparency AI — Transparent decision-making process.

Human Oversight — AI as support, doctors maintains final responsibility.

Fair AI — Prevent algorithmic bias

Technology serves humanity, never replaces it.

Open source project

SCAN ME

Thank You!