About Our Team

helloWorld

Mawiya Manzar

Expert in multi-agent design using LangGraph and LangChain; strong technical problem-solving and workflow automation

Irfan Zaki

Skilled in Langgraph and making backend REST APIs strong in research analysis.

Why I Chose the Pharmaceutical Problem Statement

The pharmaceutical industry invests **billions of pounds and years** discovering new drugs, yet many potential treatments already exist as **approved molecules** that could be **repurposed** for new diseases.

The Challenge

Identifying repurposing opportunities takes **months of manual research**, requiring scientists to analyse patents, journals, and clinical trial data across scattered databases.

The Solution

Using **Agentic AI** to intelligently search, understand, and summarise vast scientific data — reducing time from **months to days**.

The Impact

Combining AI, healthcare, and data analysis to make a real-world impact in people's lives through faster innovation.

Agentic AI Approach for Drug Repurposing

The proposed solution is an **Agentic AI framework** where multiple intelligent agents collaborate to perform specialised research tasks. A **Master Agent** understands the researcher's question and divides it into smaller tasks for Worker Agents.

Patent Agent

Searches patent databases to find active or expired patents related to the molecule.

Clinical Trials Agent

Identifies ongoing or completed clinical trials and summarises key findings.

Web Intelligence Agent

Scans research papers, medical news, and regulatory updates for potential new indications.

Market Analysis Agents

Analyse market trends, trade volumes, and therapy-area competition to assess commercial potential.

Internal Knowledge Agent

Summarises company documents and internal reports.

Report Generator Agent

Combines all results into a professional report or dashboard.

1 User Query

2 Master Agent

3 Worker Agents

4 Summary Report

Intelligent Research Companion for Pharma Innovation

The solution acts as a **conversational research assistant**. Users simply enter a prompt such as *'Find new uses for Metformin'* or *'Check innovation trends for Paracetamol'*.

The AI automatically gathers and integrates insights from diverse data sources — regulatory websites, patents, clinical trials, and scientific journals.

AI-Generated Report Includes:

- Potential new therapeutic indications
- Ongoing clinical trials and their status
- Competitive patent landscape and expiry timelines
- Market demand trends with references

Example Output

Prompt: "Find new indications for Paracetamol"

AI Output: 3 ongoing clinical trials exploring migraine and neural pain • 2 patents expiring in 2026 on novel pain-relief formulations • Market data shows steady demand in neurology segment

💡 Insight: Paracetamol shows potential for migraine-related applications.

Benefits and Impact of the Proposed Solution

Time Efficiency

Cuts early-stage research time from 2–3 months to a few days, allowing faster decision-making.

Accelerated Innovation

Helps uncover hidden drug-disease relationships, enabling novel treatments for unmet medical needs.

Business Advantage

Strengthens the company's R&D pipeline and improves success rates in product development.

Automation

Reduces repetitive manual work of reading hundreds of papers and reports.

Data-Driven Decisions

Ensures insights are backed by structured data and real-time evidence.

Social Impact

Faster innovation leads to earlier patient access to effective therapies and better quality of life.

Future Enhancements and Vision

Our roadmap extends from prototype to scalable AI system, with ambitious plans for expansion and real-world integration.

Integration with Real APIs

Connect live with databases such as PubMed, ClinicalTrials.gov, and IQVIA to fetch real-time data.

AI Summarisation Models

Use advanced LLMs like ChatGPT, LangChain, or CrewAI to enhance contextual understanding and summarisation.

Predictive Analytics

Apply ML models to forecast which molecules are most likely to succeed in repurposing efforts.

Safety Prediction

Extend capabilities to analyse pharmacovigilance reports for adverse effects and side-effect prediction.

Scalability

Adapt the framework for diagnostics, vaccine research, or nutraceuticals.

Collaboration Portal

Enable multiple researchers to collaborate on shared AI-generated reports.

Powered by India's leading enterprises

Hero

ADITYA BIRLA FASHION

mahindra Rise

firstsource

TATA CAPITAL

asianpaints

Thank you for your attention!