Research Agent – Agentic AI for accelerated research

Track: VC big bets

1. Motivation / Goal to Achieve

AI can now summarize and retrieve information — but can it **reason and collaborate** to uncover something new?

In this challenge, your goal is to **build a small ecosystem of AI agents** that work together to **analyze research content, generate insights, and explain their reasoning** in a clear, verifiable way.

Think of it as a **mini research lab powered by agents**: one reads and summarizes papers, another critiques and questions, a third synthesizes insights — all collaborating to push understanding forward in a chosen topic.

You don't need to build a full discovery engine — just **show how agents can think better together than alone.**

2. Core Features (MVP)

Knowledge Ingestion
Let your system take in a few research papers, articles, or data summaries (e.g., from arXiv, Wikipedia, or uploaded PDFs, hugging face).
Parse and extract key concepts, findings, and data points using an LLM or embeddings.

Multi-Agent Reasoning
Create 2–6 specialized agents (e.g., Researcher, Reviewer, Synthesizer).
Each agent contributes a distinct role: one explains, one critiques, one summarizes or proposes follow-up questions.
Agents should converse or message each other, refining their reasoning together (via a chain or graph).

Insight Generation
Output a short “Collective Insight Report” — e.g., “Here’s what these papers suggest about renewable energy efficiency, and here’s a hypothesis worth exploring.”
Include citations or reasoning traces (why they concluded this).

3. Stretch Goals (Optional Enhancements)

Verifiable Reasoning: Include sources or snippets supporting each insight.

Visual Graph: Display the conversation or reasoning flow between agents.

Open Protocols: Use MCP or A2A to make your agents interoperable.

4. Hints and Resources

Frameworks

- Multi-agent frameworks: **CrewAI**, **LangGraph**, **AutoGen**, **OpenAI Assistants API**.
- Document tools: **LangChain Document Loaders**, **arXiv / Semantic Scholar API**, **OpenAlex**.
- Visualization: **React + D3.js**, or even a simple streamlit dashboard.

Data Sources

- Pick a narrow but interesting research topic (e.g., *AI for climate modeling*, *battery efficiency*, *mathematical conjecture discovery*).
- Use 10-20 short papers or summaries — don’t overcomplicate data ingestion.

Pro Tip:
Focus on making the **conversation between agents visible and meaningful**. Even a simple debate between two roles can feel like real reasoning if the logic flow is clear.

5. Why It Matters

This challenge explores how **multi-agent reasoning can enhance research and learning**, even at a small scale.

In just 24 hours, you’ll prototype a system that shows the **emergent intelligence of collaboration** — where simple agents, when working together, can synthesize ideas faster and clearer than one model alone.