

One-Pager Abstract

Simple Multi-Agent Chat System

What is the System?

This project implements a Simple Multi Agent Chat System designed to demonstrate fundamental concepts of Knowledge Representation and Reasoning (KRR). The system consists of a Coordinator (Manager) agent and three specialized worker agents: Research Agent, Analysis Agent and Memory Agent. The goal of the system is to collaboratively answer user queries by decomposing tasks, retrieving structured knowledge, performing reasoning and maintaining contextual memory across interactions.

How Does the System Work?

When a user asks a question, the **Coordinator Agent** first looks at the query and decides how complex it is. Based on this, it chooses which agents are needed to answer the question.

For **simple questions**, the coordinator sends the query to the **Research Agent**, which finds relevant information from a pre loaded **JSON knowledge base** that acts like a mock web search.

For **complex questions** such as analysis or comparison, the Coordinator first uses the Research Agent to collect information and then passes the results to the **Analysis Agent**, which performs reasoning and creates a summarized answer.

The **Memory Agent** saves important details of each interaction, such as the topic, time, agent involved, source, and confidence score. This allows the system to remember past discussions and reuse previous results, helping it avoid doing the same work again.

Overall, the system shows **collaboration between multiple agents**, **adaptive decision making**, and **clear, explainable reasoning** which can be easily followed through the console logs.