Generative AI Agents – Task Automation with LLM Reasoning

LAB Assignment on CrewAI

Use CLI tool of CrewAI to build the following Flows.

Update the definitions of the agents and tasks in the YAML files as needed.
Keep adding more crews inside an existing Flow.

Check the *crewai_tools* for the available tools. Create custom tools as needed.

Assignment 1: Automated Research & Writing Flow

Problem Statement

Design a CrewAI Flow that automates the process of writing a short research digest article on a given technical topic. The flow should start from searching for credible papers, then extract insights, and finally write a structured article draft.

Flow Definition: The Flow should consist of <u>three Crews</u>:

1. **Research Crew**
   - **Task:** Search for recent technical papers related to the given topic.
   - **Agents:**
     - *Searcher Agent*: Finds 5–7 relevant research papers.
     - *Validator Agent*: Validates that the papers are from credible sources.

2. **Analysis Crew**
   - **Task:** Read the selected papers and extract 3–5 key insights.
   - **Agents:**
     - *Summarizer Agent*: Creates short summaries for each paper.
     - *Insight Extractor Agent*: Identifies common themes and research gaps.

3. **Writing Crew**
   - **Task:** Draft a concise 600–800 word digest article.
   - **Agents:**
     - *Outline Creator Agent*: Designs a logical article structure.
     - *Writer Agent*: Expands the outline into a draft.
     - *Proofreader Agent*: Checks clarity, flow, and correctness.

Expected Outcome: A well-written, structured research digest article on the input topic.

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Assignment 2: Market Intelligence & Business Pitch Flow

Problem Statement

Build a CrewAI Flow that generates a mini business pitch for a startup idea in an assigned industry (e.g., HealthTech, EdTech, or FinTech).
The Flow should collect market intelligence, analyze competitors, and prepare a concise pitch deck draft.

Flow Definition: The Flow should consist of <u>three Crews</u>:

1. **Market Research Crew**
   - **Task:** Collect industry and market trends.
   - **Agents:**
     - *Data Collector Agent*: Fetches latest reports, statistics, and market sizes.
     - *Trend Analyst Agent*: Summarizes key opportunities and challenges.

2. **Competitor Analysis Crew**
   - **Task:** Identify 3–5 competitors in the given sector and analyze their strategies.
   - **Agents:**
     - *Competitor Finder Agent*: Finds existing companies in the space.
     - *SWOT Agent*: Conducts SWOT analysis for each competitor.

3. **Pitch Writing Crew**
   - **Task:** Generate a short 3–4 slide pitch draft (executive summary).
   - **Agents:**
     - *Pitch Designer Agent*: Defines structure (Problem, Solution, Market, Competitors).
     - *Writer Agent*: Creates draft slide content.
     - *Reviewer Agent*: Ensures the pitch is clear and compelling.

Expected Outcome: A structured business pitch draft including problem statement, solution, market size, competitor landscape, and USP.