Project Assignment

Autonomous AI Knowledge Worker

Issued by: Cothon Solutions
Role: Software Development Engineer – Intern
Duration: 1 Month

Project Overview

Welcome to Cothon Solutions. You have been selected for a unique challenge: to design, develop, and deploy an **Autonomous AI Knowledge Worker**. This AI-powered system will operate with minimal human input, autonomously researching, processing, and delivering actionable insights to stakeholders.

As the sole developer of this project, you will take full responsibility for ideation, implementation, testing, and deployment. Your success will be evaluated not only on technical delivery but also on creativity, problem-solving, and adherence to enterprise-grade development practices.

Objectives

- Develop a fully autonomous AI workflow. Integrate multiple data sources and APIs.

- Implement advanced AI processing for summarization and insight generation.

- Create a secure, user-friendly dashboard for stakeholders.

- Demonstrate professional software engineering practices.

Core Requirements

1. **Data Collection & Integration**

   - Integrate APIs (e.g., NewsAPI, Alpha Vantage) and allow manual uploads.

   - Ensure data integrity and handle failure gracefully.

2. **AI Processing Pipeline**

   - Implement topic extraction (NLU), summarization, and insight generation.

   - Ensure models are optimized for enterprise workloads.

3. **Task Orchestration**

   - Autonomous task scheduling (daily reports, periodic checks).

   - Use LangChain or equivalent for orchestration.

4. **User Dashboard**

   - Stakeholder-friendly interface with real-time status and insights.

   - Ability to request new tasks from AI.

5. **Autonomy & Memory**

   - Store context for improving AI over time.

   - Implement historical search and analytics.

Experience - Enhancing Features

- **Voice-based query handling**.

- **Autonomous web search for up-to-date data**.

- **Multi-user mode with role-based access control**.

- **Interactive report builder** for customized outputs.

- **Real-time collaboration mode**.

- **Pluggable AI agents** for specialized tasks.

- **Offline mode with automatic sync**.

Required Tech Stack

- **Frontend:** React.js or Next.js, TailwindCSS

- **Backend:** Python (FastAPI / Flask)

- **Database:** PostgreSQL (structured), Pinecone/Weaviate (vector search)

- **AI/ML:** OpenAI API, Hugging Face, LangChain

- **APIs:** NewsAPI, Alpha Vantage, Google Search API

- **Deployment:** Vercel/Netlify (frontend), Render/Heroku (backend)

One-Month Milestone Plan

Week	Milestone	Deliverables
1	API integrations + file upload	Functional connectors, data pipeline POC
2	AI pipeline implementation	End-to-end summarization & insight generation
3	Dashboard UI	Secure, responsive interface
4	Autonomy & deployment	Context memory, production deployment

Evaluation Criteria

- **Technical Depth** (30%) – AI workflow quality.

- **Integration Proficiency** (25%) – Seamless data handling.

- **System Design & UX** (20%) – User-centric and scalable.

- **Maintainability** (15%) – Clean code & documentation.

- **Innovation** (10%) – Beyond-core features.

Deliverables & Reporting

- **Final Deliverable Due Date: 21 September 2025**

- **Weekly Reports:** A detailed report on the mail (cothonsolutions@gmail.com) to be submitted every week containing:

    - Progress updates on milestones.

    - Any technical or functional queries.

    - Blockers requiring attention or approval.

- **Weekly Meetings:** Mandatory virtual meetings will be scheduled to:

    - Review progress.

    - Provide feedback.

    - Discuss and approve any major changes to scope or approach.

Final Deliverable

A production-grade autonomous AI system, deployed and accessible via a secure dashboard, capable of delivering real-time insights with advanced autonomy features, demonstrating readiness for enterprise-scale engineering challenges.