Hackathon Challenge Topic - Agentic AI Approach

UTD Career Guidance AI System

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The Problem

Current career advice for UTD students is generic and lacks connection to real job market data. Students get basic course lists without understanding how their education translates to actual career opportunities or what additional skills they need.

What Students Will Build

A practical **agentic AI system** where autonomous agents work together to help UTD students make informed career decisions by connecting three key pieces:

1. **Job Market Data** - What employers are actually looking for right now
2. **UTD Course Catalog** - What courses are available and what skills they teach
3. **Career Planning** - How to bridge the gap between education and employment

Agentic Framework Approach

Students will create **specialized AI agents** that work independently:

Job Market Agent

- Automatically scrapes job postings from LinkedIn, Indeed, Glassdoor
- Extracts skills, requirements, and salary information
- Identifies trending skills and job availability by location

Course Catalog Agent

- Autonomously gathers UTD course descriptions and prerequisites
- Analyzes course content to extract taught skills and competencies
- Maps relationships between different courses and programs

Career Matching Agent

- Takes user career goals and coordinates with other agents
- Analyzes job requirements vs. available coursework
- Generates personalized course recommendations with explanations

Project Advisor Agent

- Suggests specific projects that bridge coursework to job requirements
- Recommends technologies and frameworks to learn
- Provides portfolio development guidance

How Agents Collaborate

When a student asks "I want to become a data scientist," here's what happens:

1. **Career Matching Agent** receives the request
2. **Job Market Agent** automatically scrapes current data scientist job postings
3. **Course Catalog Agent** analyzes UTD courses for relevant skills
4. **Project Advisor Agent** suggests practical projects to build required skills
5. All agents coordinate to provide a comprehensive response

Technical Implementation

Using **AWS Bedrock Agents**, students build autonomous systems that:

- Perform web scraping and data collection without human intervention
- Process and analyze large amounts of text data from job postings and course catalogs
- Make intelligent connections between market needs and educational offerings
- Provide conversational interfaces for students to interact with the system

Realistic Scope for 10-Day Hackathon

Teams should focus on:

- Building 3-4 functional agents that can work independently

- Demonstrating agent coordination for career planning tasks
- Creating a working system that provides valuable career guidance
- Showing effective use of AWS Bedrock's agentic capabilities

Success looks like: A student can ask about any career path and get intelligent, data-driven course recommendations generated entirely by autonomous agents.

Success Criteria

A successful project will:

- Demonstrate autonomous agents working together without human data collection
- Provide relevant UTD course suggestions based on real job market analysis
- Show clear agent specialization and coordination
- Prove that agents can gather and process information independently
- Create a system that UTD students would actually want to use