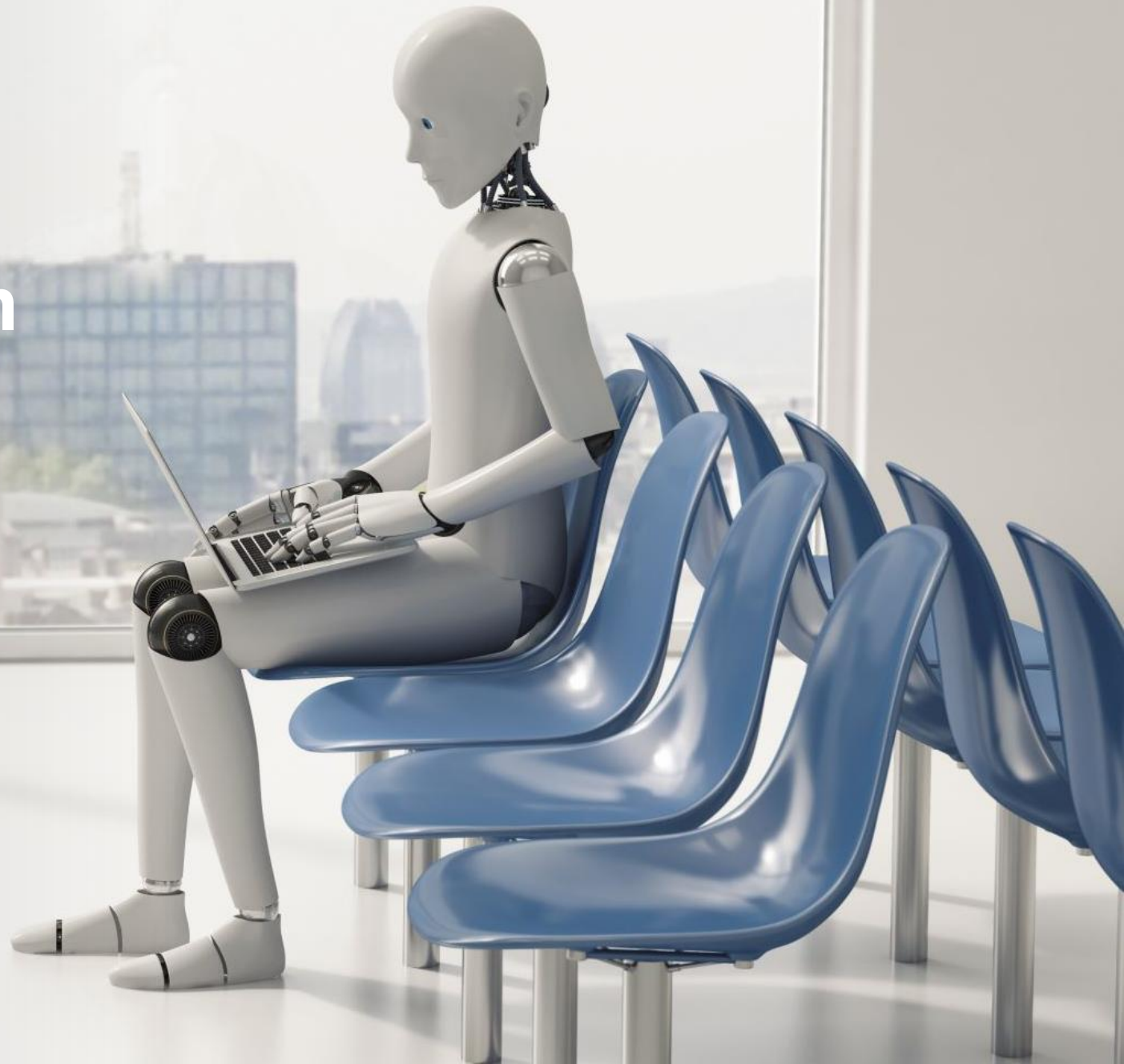
AI-Powered Multi-Agent Career Acceleration Platform



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Agenda

- Problem Overview
- Project Goals
- System Architecture
- Five AI Agents
- Workflow & Demo
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- Impact
- Challenges
- Future Enhancements
- Conclusion

Problem Overview

The job search process is broken:

Resumes get rejected by ATS filters

Job seekers struggle to find the right roles

Tailoring resumes takes time

Interview preparation is inconsistent

Students lack strong project portfolios

Project Motivation

Why we built this:

To automate and simplify the entire career pipeline

To help job seekers transition faster

To offer an AI-driven, structured guidance system

To move from *manual* to *smart automated* workflows

Project Goals

Build

Build a modular multi-agent AI system

Automate

Automate resume → job search → interview → portfolio steps

Ensure

Ensure accuracy, personalization, and interoperability

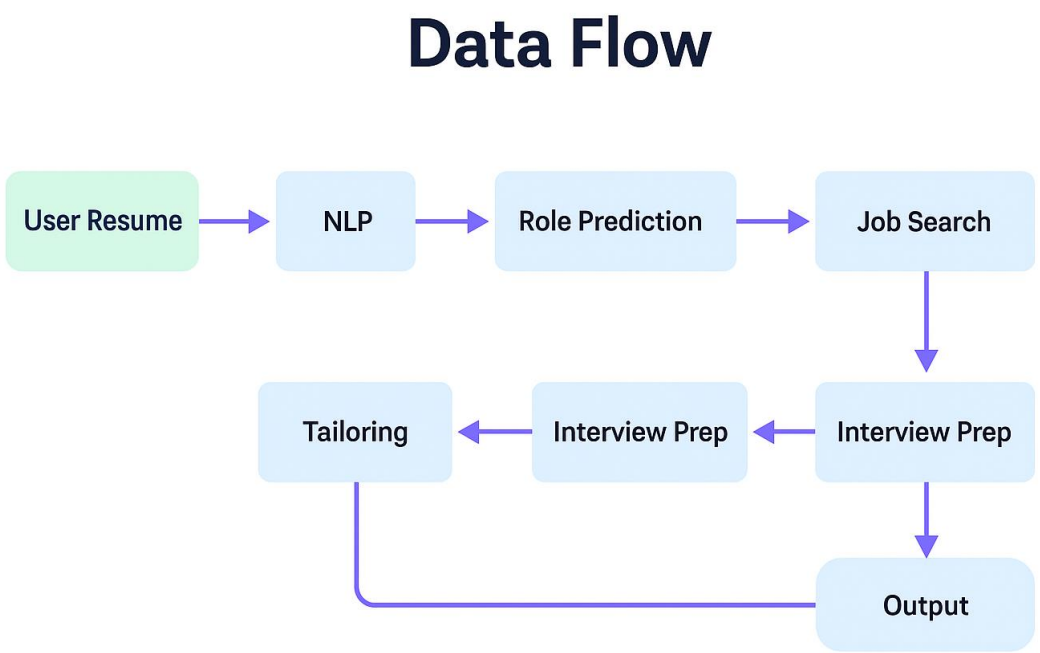
Deliver

Deliver scalable APIs for future expansion

Our Five-Agent Architecture

- Resume Analyzer
- Job Finder
- Resume Tailor
- Interview Coach
- Project Mentor

Data Flow Diagram



Input Phase

- User uploads resume
- NLP extracts text, skills, experience and keywords

Processing Phase

- Role prediction model identifies suitable job roles
- Job search agent fetches relevant openings
- Interview prep agent generates role-based questions

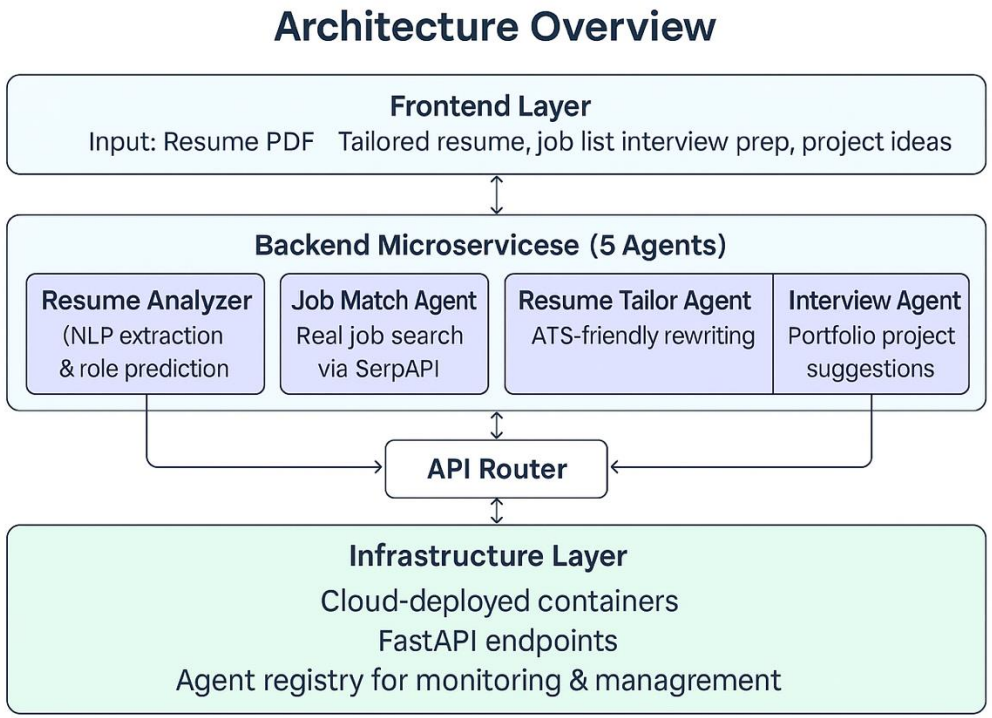
Refinement Phase

- Resume tailoring aligns content with selected job description
- System prepares final structured output

Final Output

- Job list + tailored resume + interview preparation + project ideas

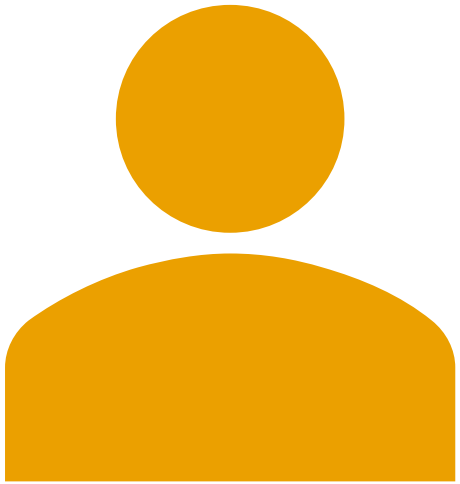
System Architecture Overview



Architecture Layers:

- **Input Layer:** Resume PDF
- **Processing Layer:** NLP extraction & classification
- **Action Layer:** Job search, interview prep, resume tailoring
- **Output Layer:** Tailored resume, job matches, projects

Agent 1: Resume Analyzer



Role: Detects career direction from resume

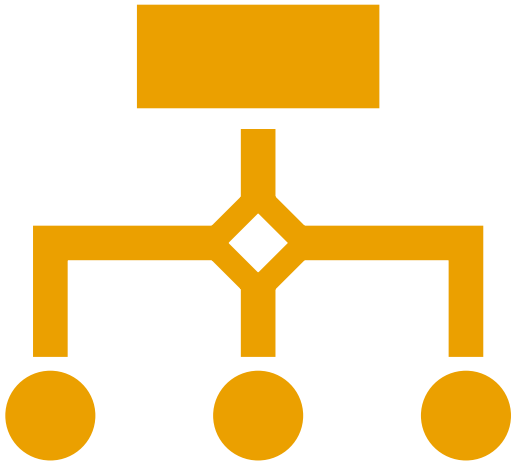
Functions:

- PDF text extraction
- Clean preprocessing
- NLP-based role prediction
- Stores structured profile

Outputs:

- Predicted Job Role
- Processed Resume Text

Agent 2: Job Finder



Role: Finds real job openings

Functions:

- Queries SerpAPI → Google Jobs
- Filters by role, location, keywords
- Generates structured job cards

Outputs:

- Title | Company | Location
- Apply link
- Description summary

Agent 3: Resume Tailor

Role: Tailors resume for a specific job

Functions:

- ATS keyword injection
- Rewrite sections (skills, experience)
- Produces a clean, customized version

Outputs:

- Job-specific optimized resume

Agent 4: Interview Coach

Role: Provides interview readiness

Functions:

- Behavioral & technical questions
- STAR answers
- Company-specific preparation
- Warm-up practice scripts

Outputs:

- Full interview prep kit

Agent 5: Project Mentor

Role: Builds portfolio direction

Functions:

- Suggests 3–5 tailored projects
- Includes required tools, data sources
- Provides expected outcomes
- Helps prepare GitHub readiness

Outputs:

- Personalized portfolio roadmap

System Deployment & Agent Registry

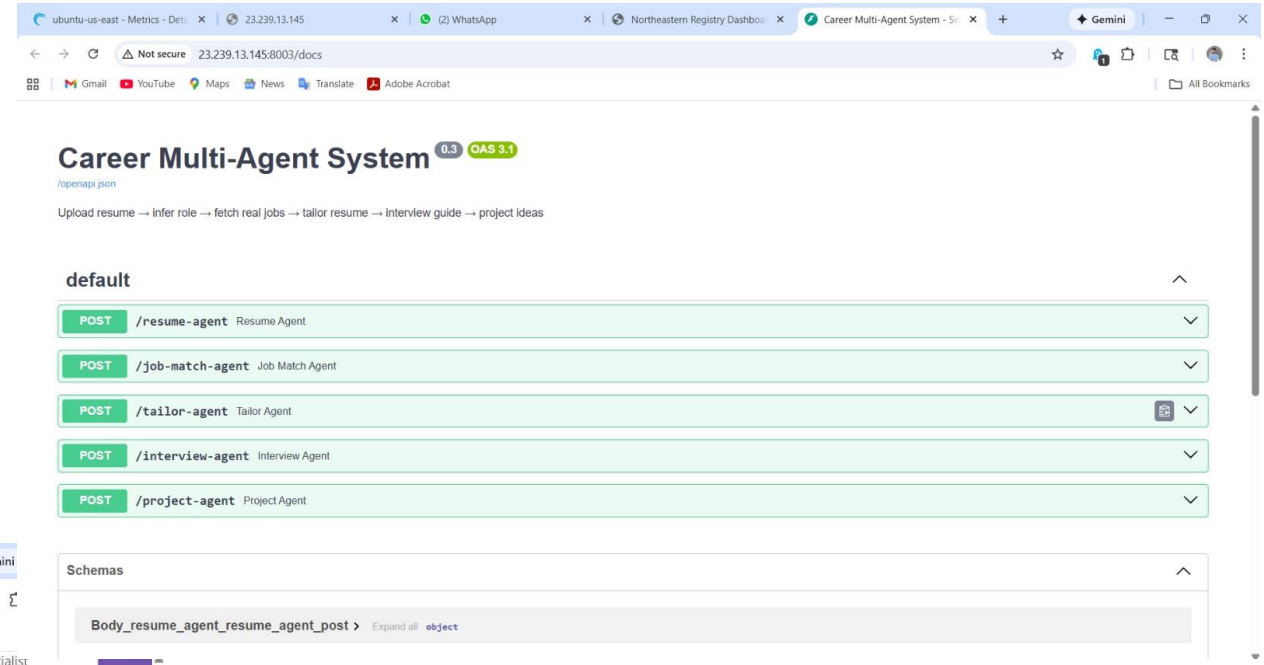
Our multi-agent system is fully deployed on a cloud server using containerized microservices.

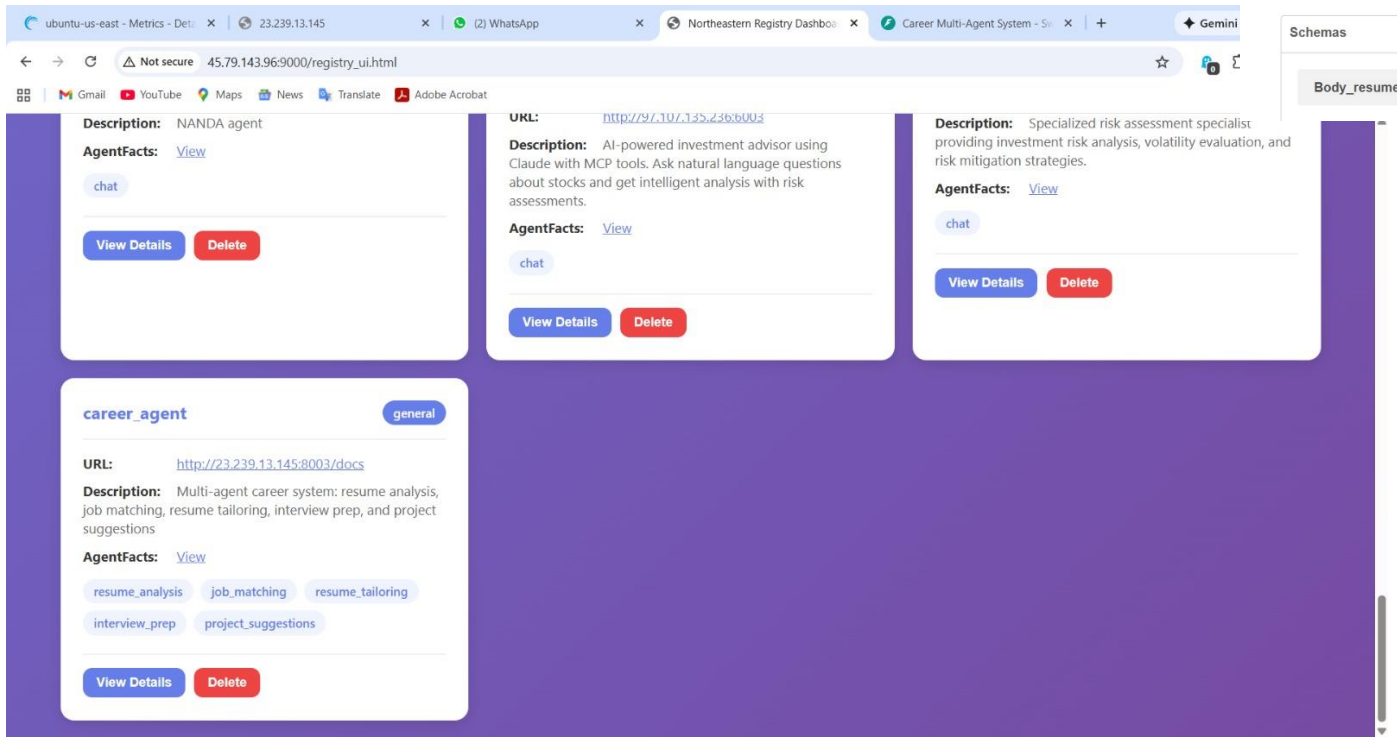
A centralized **Agent Registry Dashboard** displays all active agents, their metadata, capabilities, and API endpoints.

Each agent exposes a structured FastAPI interface, enabling real-time testing of resume analysis, job matching, tailoring, interview preparation, and project mentoring.

The deployment ensures **modularity**, **scalability**, and **independent debugging** for each microservice.

The live /docs interface (OpenAPI 3.1) provides interactive testing, making validation and integration seamless for the entire team.


Not secure 23.239.13.145:8003/docs
Career Multi-Agent System 0.3 OAS 3.1
/openapi.json
Upload resume → infer role → fetch real jobs → tailor resume → interview guide → project ideas
default
POST /resume-agent Resume Agent
POST /job-match-agent Job Match Agent
POST /tailor-agent Tailor Agent
POST /interview-agent Interview Agent
POST /project-agent Project Agent
Schemas
Body_resume_agent_resume_agent_post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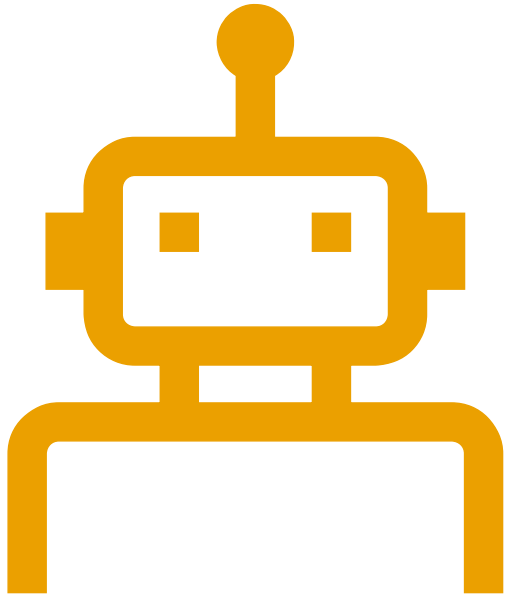
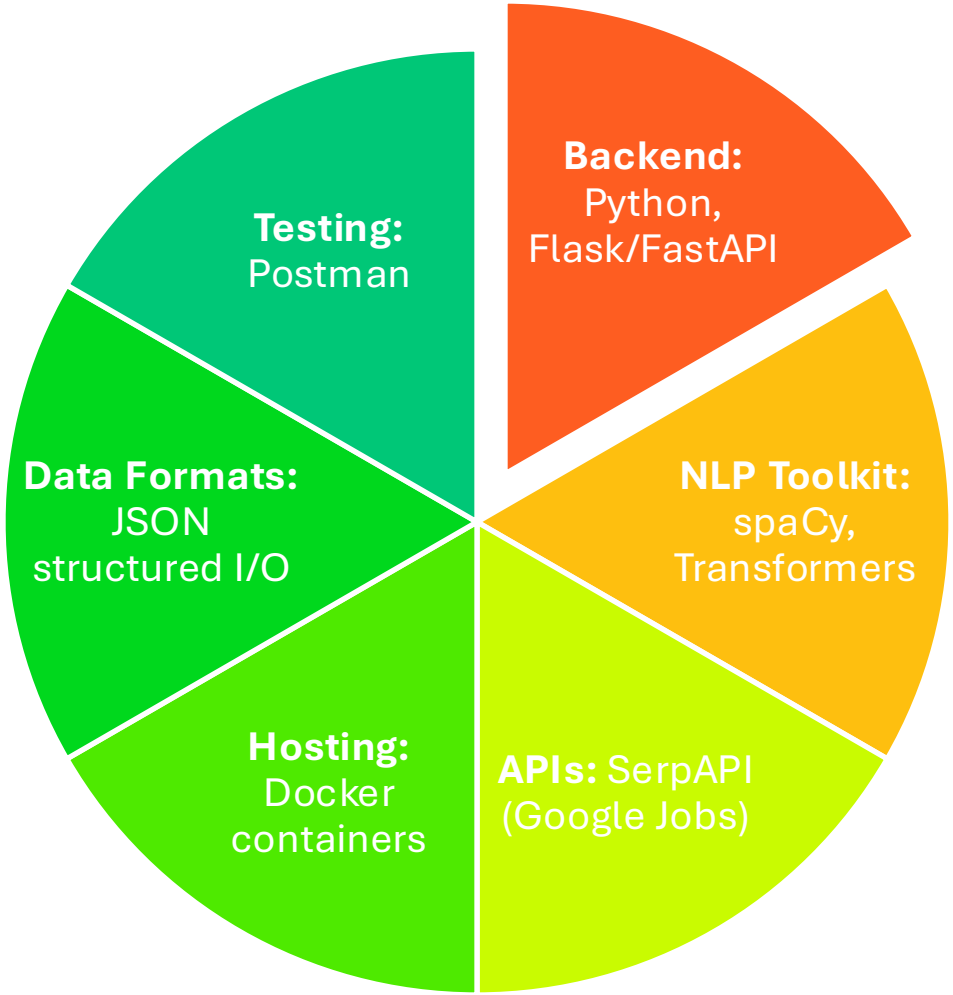
Description: NANDA agent
AgentFacts: View
chat
View Details
Delete
Description: AI-powered investment advisor using Claude with MCP tools. Ask natural language questions about stocks and get intelligent analysis with risk assessments.
AgentFacts: View
chat
View Details
Delete
Description: Specialized risk assessment specialist providing investment risk analysis, volatility evaluation, and risk mitigation strategies.
AgentFacts: View
chat
View Details
Delete
career_agent
general
URL: http://23.239.13.145:8003/docs
Description: Multi-agent career system: resume analysis, job matching, resume tailoring, interview prep, and project suggestions
AgentFacts: View
resume_analysis
job_matching
resume_tailoring
interview_prep
project_suggestions
View Details
Delete

End-to-End Workflow

1 → Resume Upload
2 → Role Prediction
3 → Job Search
4 → Tailored Resume
5 → Interview Prep
6 → Project Suggestion

Technical Stack





Demo

Key Results

Fully automated multi-agent pipeline

Resume tailoring quality improved by ~70% (keyword match)

Job search efficiency increased with real-time data

Interview preparation structured with STAR methodology

Portfolio projects now aligned with actual job trends

Impact

For Students:

- Faster job readiness
- Clear project direction

For Job Seekers:

- Higher ATS score
- Stronger interview confidence

For Institutions:

- Automated career coaching at scale

Future Enhancements

- Deploy full system to cloud (AWS/GCP)
- Build a dashboard UI (Streamlit/React)
- Add job tracking & analytics dashboard
- Integrate LinkedIn job scraping
- Multi-language resume support
- Add recruiter-side tools

Conclusion

The Multi-Agent Career System successfully:

Automates the entire job search pipeline

Delivers personalized, actionable guidance

Reduces time-to-application

Enhances job readiness and portfolio strength

Provides a scalable framework for career AI tools

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