Technical Specification Document (TSD) for AI-Powered Recruitment Agent Using A2A Protocol

1. Project Overview

The AI-Powered Recruitment Agent project aims to automate and optimize the hiring process through the use of specialized AI agents and the Agent-to-Agent (A2A) communication protocol. Each AI agent is tasked with a specific function such as candidate sourcing, resume screening, and background verification, and the A2A protocol allows them to communicate and share data efficiently.

2. Business Objective

The primary business objective of this project is to reduce the manual effort in the recruitment process, speed up the hiring cycle and improve the quality of hires by leveraging AI and A2A protocol for seamless coordination among different AI agents.

3. Functional Requirements

The system is expected to have the following capabilities:
- Candidate sourcing and profile acquisition
- Resume screening and job-fit evaluation
- Scheduling of interviews
- Seamless data sharing between AI agents

4. User Journey / UX Flow

The user (recruiter) initiates the process by creating a new job requirement. The sourcing agent then starts looking for potential candidates. Once candidates are found, the resume screening agent evaluates the candidates based on the job requirements. The interview scheduling agent then schedules interviews for shortlisted candidates.

5. Architecture & Data Flow

The architecture of the system is built around the A2A protocol. The data flow involves the sourcing agent acquiring candidate data, the screening agent evaluating this data, and the scheduling agent setting up interviews based on the evaluations.

6. Tech Stack

The system is built using Node.js, with the frontend dashboard developed using React.js. The AI is powered by the OpenAI GPT API, and the A2A protocol is implemented using DIDComm v2.

7. API & Module Design

The system consists of multiple API endpoints and modules to handle different tasks. Key files include recruitmentAgent.js, a2aHandler.js, and agentMessages.js, which handle agent tasks, A2A protocol, and agent messaging respectively.

8. Detailed File Change Summary

The PR includes changes to several files, including recruitmentAgent.js (Recruitment agent logic), a2aHandler.js (A2A Protocol handler), agentMessages.js (Agent messaging API), and RecruitmentDashboard.jsx (Frontend Dashboard).

9. Integration Details

The system integrates with the OpenAI GPT API for AI capabilities, and the DIDComm v2 protocol for agent communication.

10. Deployment Strategy

The system is deployed using a CI/CD pipeline, with the feature flag "enableRecruitmentAgent=true".

11. Testing Plan

The system includes unit and integration tests covering all the major functionalities. Additional testing will be done in a staging environment before moving to production.

12. Known Limitations

The current system has some limitations in terms of resume parsing and model speed, as mentioned in the comments by Ankit Anand.

13. Future Enhancements

Potential future enhancements include improving the AI model for better resume parsing and faster response times.

14. Approval Summary

The PR was approved by Priya M, Aditya M, and Neha B on 2025-08-07.

15. Appendix

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JIRA Ticket Information

Field	Value
Ticket ID	AICOE-1012
Title	AI-Powered Recruitment Agent Using A2A Protocol
Status	Testing
Created On	2025-05-12 07:43
Created By	Fahad Neshat
Assignee	Jaydeep Mondal
Reporter	Fahad Neshat
Labels	None
Components	None

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Git PR Details

Field	Value
Title	Implement AI-powered recruitment agent using A2A protocol
Raised By	Ronak G
Approved By	Priya M, Aditya M, Neha B
Merged On	2025-08-08
PR Link	[Link](https://bitbucket.org/Demo/rg-platform/pull-requests/1327)

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Comments

- **2025-07-15 05:25 – Ankit Anand**: Working on Resume PoC, there are some issues in finding proper resume. Model is too slow, checking for other models. Not getting proper response with current model, check for other models.