

INTRODUCTION

- Annually, the United States Patent and Trademark Office (USPTO) receives over 600,000 patent applications, with more than 90% being initially rejected [1]
- Typically, it can take from one to three years to process a non-provisional patent application, which delays the commercialization of new inventions [2]
- The conventional method of patent examination and the associated delays contribute to an estimated \$2.3 trillion in losses for the United States due to abandoned applications [3]

OBJECTIVES

- Create an advanced AI-powered platform for comprehensive patent analysis, including Objections, Abstracts, Specifications, Claims, and Drawings, utilizing data from public submissions
- Provide users with actionable recommendations for Abstracts, Specifications, and Claims to enhance precision and effectiveness
- Speed up the identification of prior art with a sophisticated Keyword generator and smart patent classification forecasts
- Reduce the likelihood of human mistakes in patent applications, leading to more precise and successful filings
- Develop intuitive and user-friendly graphical user interface, reducing training cost when applied in production

METHODS: PLATFORM USE CASES

A) Document Upload and Access (UC-1):

- Users can upload and store patent documents in PDF, which are converted to JSON and stored on a cloud server
- Access is limited to the document owner and administrators

B) Document Management (UC-2):

- Owners can view and delete their documents
- Administrators have full access and management capabilities

C) Authentication and Authorization (UC-3):

- Users can create and log into accounts to access shared documents

D) Detailed Analysis Request (UC-4):

- Users can request an analysis report of their documents, stored for viewing and deletion in the application folder

E) Classification Prediction for Prior Art Search (UC-5):

- Users can request a classification prediction report post-upload, aimed at improving prior art search efficiency, accessible in the application folder

F) Keyword Report for Prior Art Search (UC-6):

- Post-upload, users can request a keyword report to enhance prior art search efficiency, stored in the application folder

METHODS: IPELiNT SYSTEM ARCHITECTURE OVERVIEW

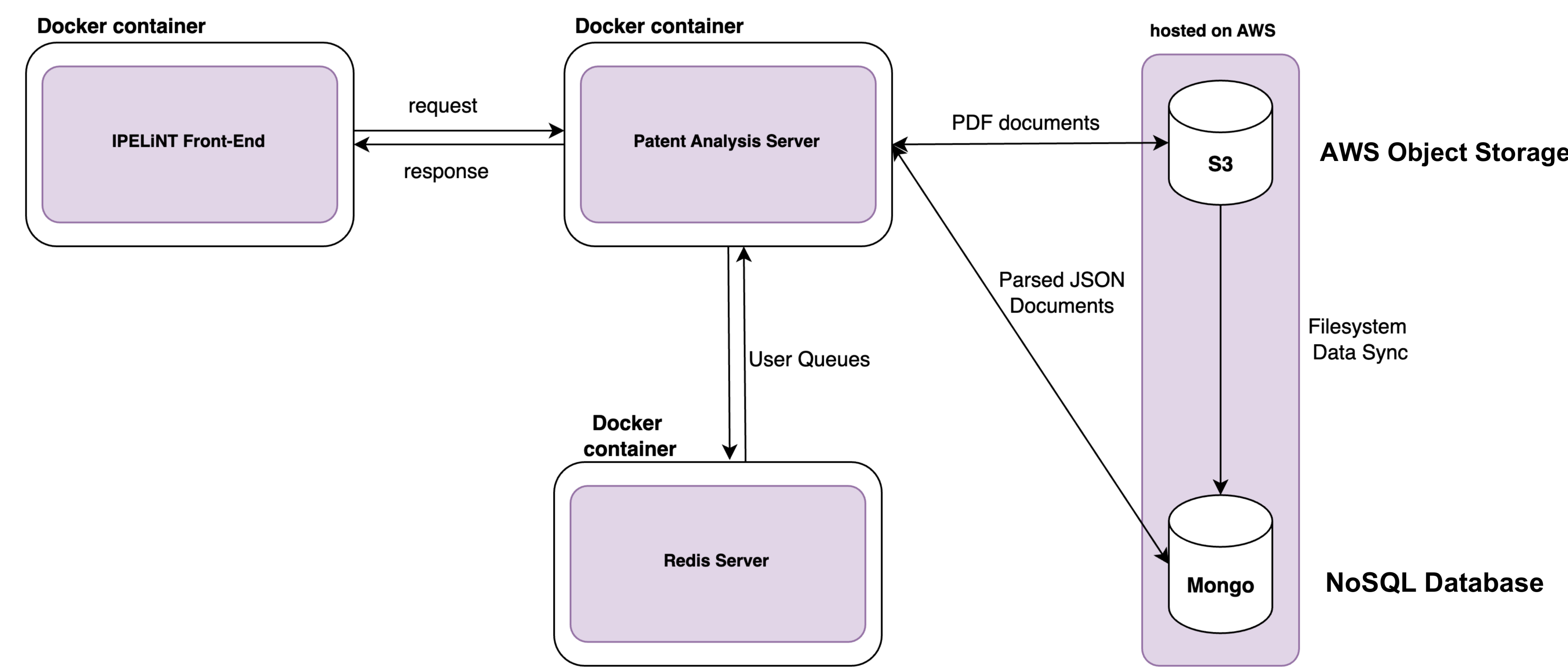


Fig. 1. IPELiNT Comprehensive System Design Architecture

METHODS: LLM REPORT ANALYSIS WORKFLOW

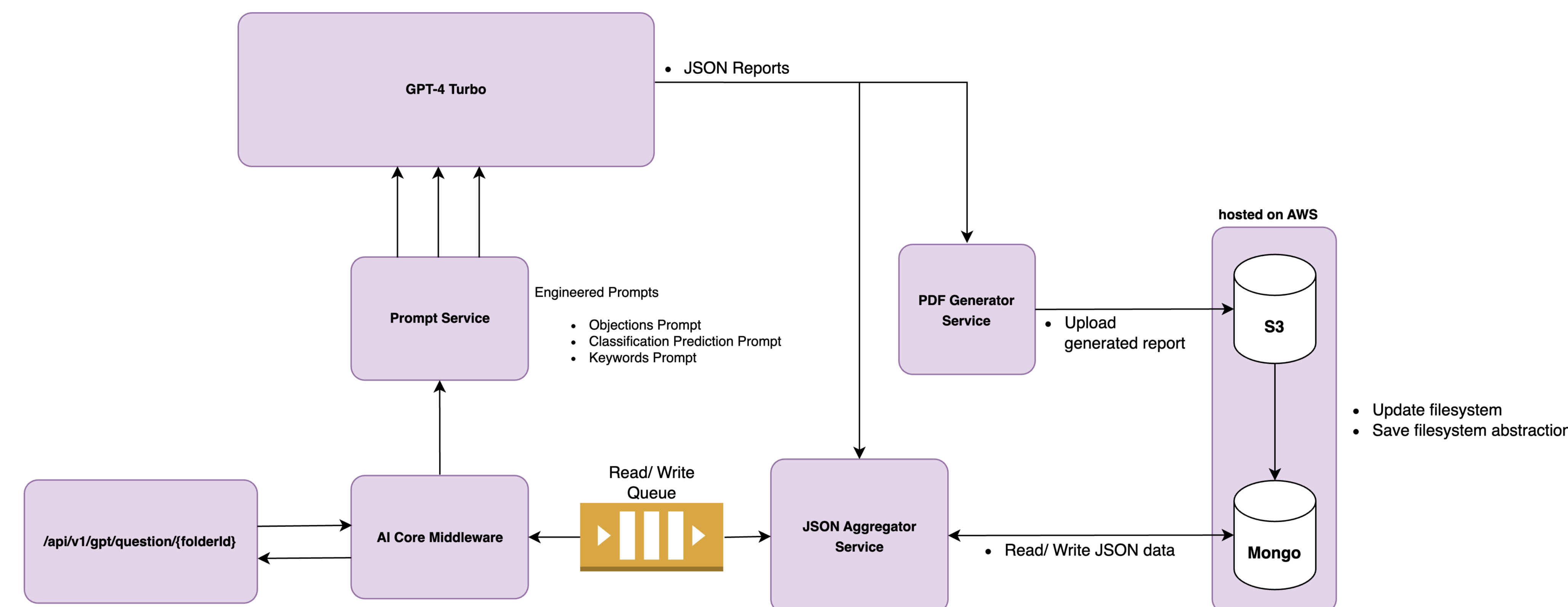


Fig. 2. Patent Analysis Report Generation Workflow via Large Language Model.

RESULTS

• UC-1 and UC-2: Document Upload and Access - Document Management

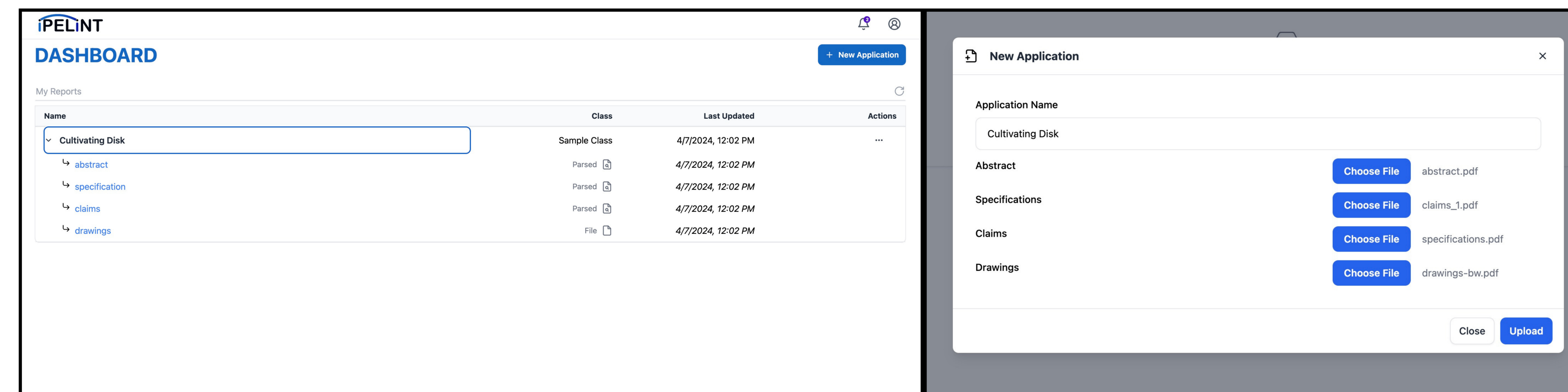


Fig. 3. Patent Application Upload and Document/Report Access User Interface

RESULTS

• UC-4, UC-5, UC-6: Detailed Objection Analysis, Keywords Analysis and Classification Predictions

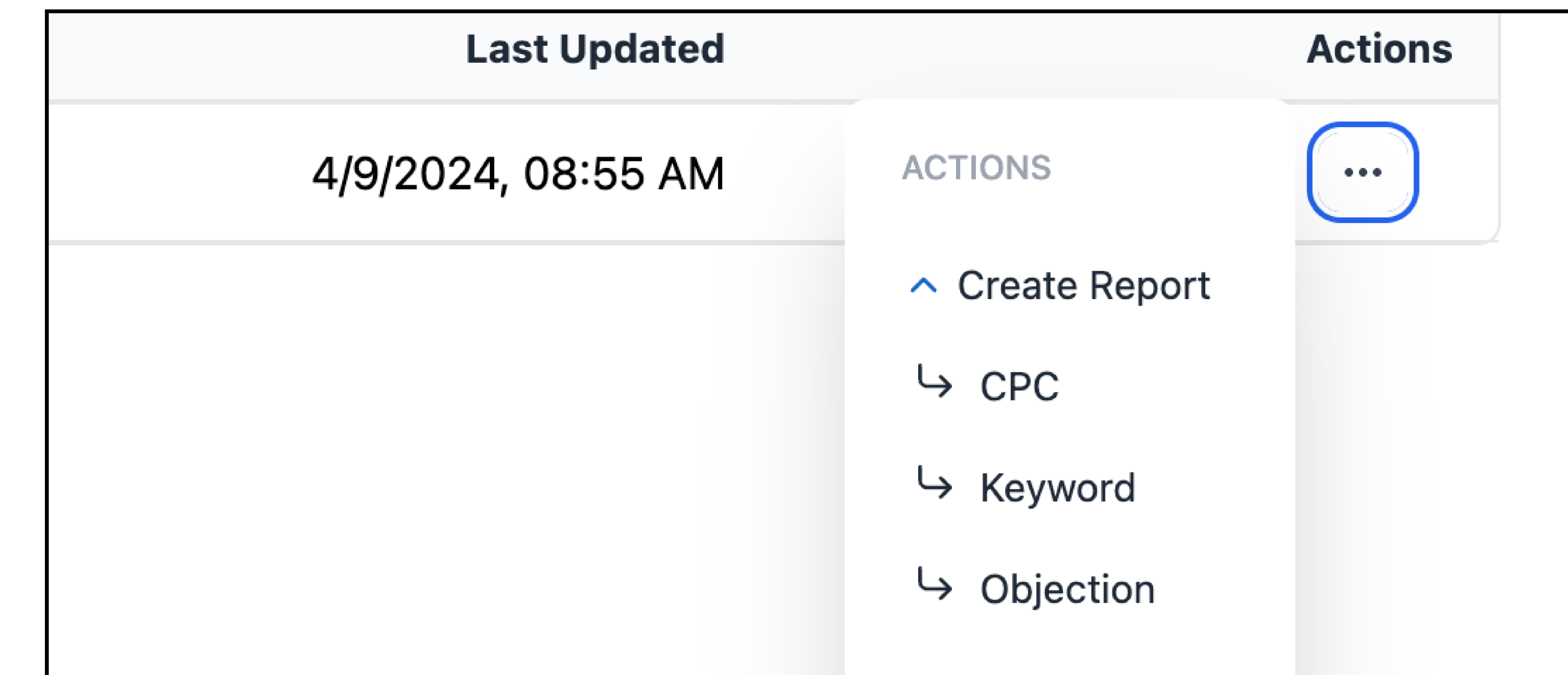


Fig. 4. Report Generation Possible Actions Component

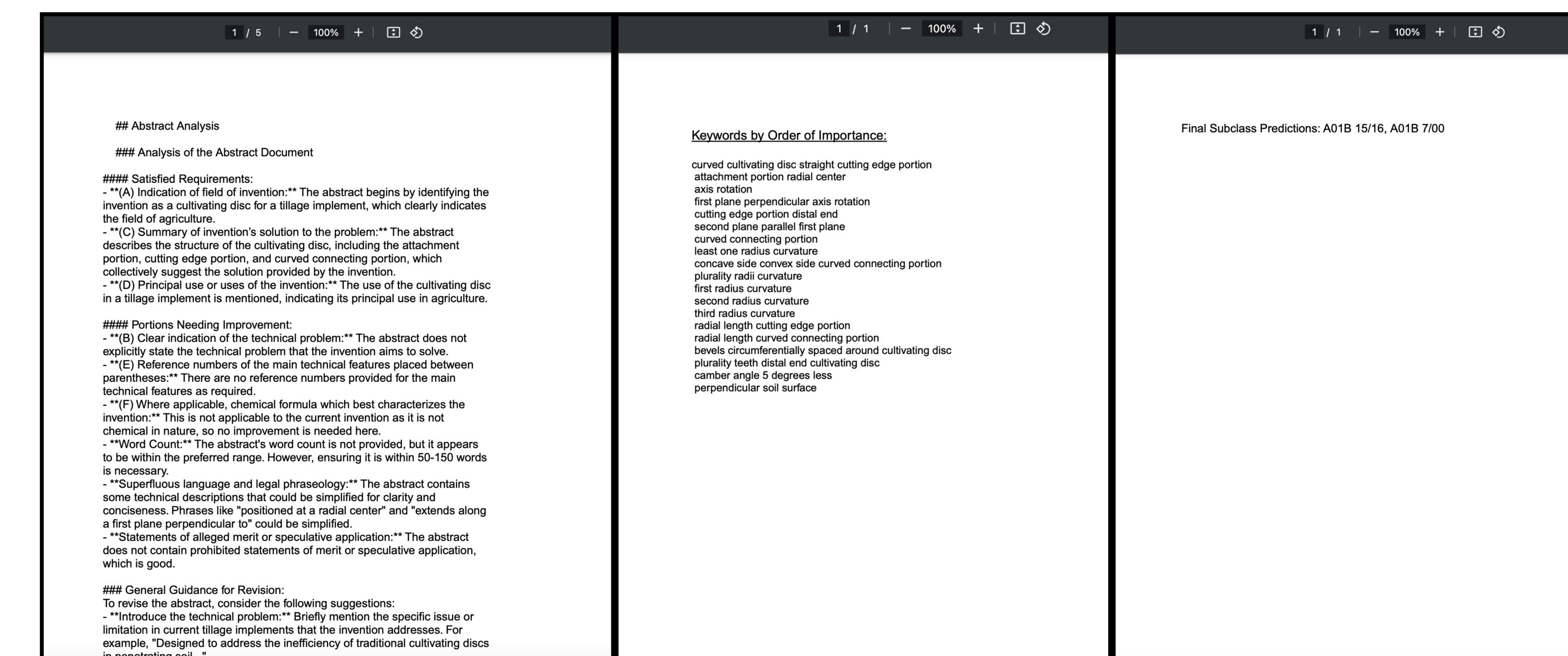


Fig. 5. Example Detailed Generated Patent Objection Report Screenshot

• UC-3: Authentication and Authorization

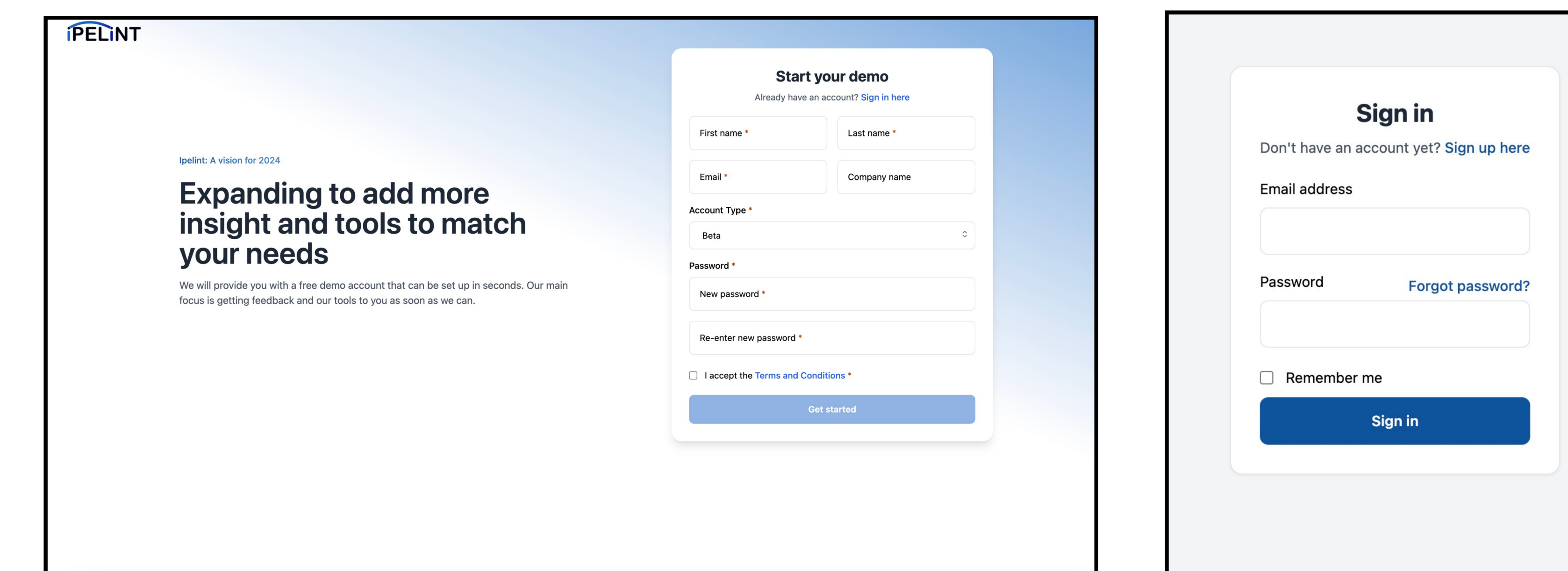


Fig. 6. Sign-up and Log-in User Interface

ACKNOWLEDGEMENTS

- Idea, financial support, and connections to the USPTO was provided by iPELiNT.
- Special thanks to Hope Shimabuku, Kathleen Fisk, Kiran Gunda, and Jessica Eley for their knowledge in patents
- The authors gratefully acknowledge Dr. Denkowski for his advice on integrating artificial intelligence and Dr. Wei, our professor, who granted this opportunity