

Career-IQ: Your AI Hiring and Career Companion

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Peer Review Information <i>Type:</i> Article <i>Received:</i> 02 April 2026 <i>Revised:</i> 28 April 2026 <i>Accepted:</i> 05 June 2026 <i>Published:</i> 23 June 2026	Abstract The present document discusses Career-IQ, an AI-powered resume analyser that produces skill insights and salary predictions in a global context. A transformer-based NLP approach, predictive modelling, and a modern web stack (Next.js, React.js, PostgreSQL, Neon) to extract key information from resumes, discover gaps in skillsets, and benchmark salaries across countries. Career-IQ fills a gap in existing hiring tools by offering an integrated experience for resume parsing, salary predictions, and personalised career recommendations and resumes. The system advances employability guidance and serves the field of incremental and AI-supported tools for hiring and career development. Keywords: Chatbot; Gemini API; Multi-Modal AI; Image Understanding; Streamlit; Conversational Interface
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Introduction

Background

The use of technology in hiring has shifted from manual review to AI, as reviewing resumes is becoming increasingly impossible given the large volume of applicants and the differing formats they use. Recently, systems able to analyse undirected text using natural language processing (NLP) and machine learning have entered the labour market, parsing resumes to find structured information on an applicant's skills, as well as providing support for matching jobs to applicants with similar skills. However, existing solutions in the labour market do not offer integrated features, such as globally predicting the salary of a position based on supplied skills, and making personalised recommendations on skills other applicants have used in a similar role. This indicates there is a gap in the market for an integrated intelligent solution. Career-IQ satisfies this gap by being able to analyse a resume, predict salary, and provide recommendations of skills in a unified AI framework.

Problem Statement

Although progress has been made with AI-assisted hiring software, there remains no integrated tool that job seekers can safely rely upon to read their resumes, forecast the relevant salary range for each country, and give country-relevant recommendations for skills to develop. Job-seekers have been stuck in a system of utilising fragmented tools, like resume parsers or job matchers, without contextual understanding, global work market knowledge and targeted recommendations for career development. What job-seekers need is a seamless, intelligent, integrated tool that can analyse their resume like a human would, identify strengths and skill gaps, and offer reliable and relevant salary forecasts in their identified countries of interest. Career-IQ will fulfil this admission gap by providing a fully AI-enabled process to improve career planning and job-seeker employability.

Objective

This study's major aims are:

1. To create an AI-based system that can effectively analyse resumes through transformer-based NLP methodologies.
2. To forecast salary ranges by country based on resume analytics and international labour market trends.
3. To identify skill gaps and give personalized advice on how to grow professionally.
4. To create a platform based on Next.js/React.js, PostgreSQL, and Neon Database, that can generate real-time, user-friendly career skills and insights.

Proposed Solution

Career-IQ has launched an AI-powered platform that analyses resumes, predicts salary ranges globally, and also recommends skills. The system connects encoder-decoder transformer-based natural language processing (NLP) to pull important resume data, runs predictive models to forecast salary range per country, then performs a semantic skill-gap analysis to suggest actionable next steps. Built using Next.js, React.js, PostgreSQL, and Neon Database, this platform provides a real-time, all-in-one solution for career planning and guided employability planning.

Contribution

This study presents a common AI-assisted platform for resume analysis, salary prediction worldwide, and recommendations for skill enhancements. It features an enhanced NLP resume parsing tool, a salary estimation model differing by country, and a semantic skill-gap analysis engine. Overall, this provides a useful, scalable platform as part of job seekers' career guidance.

Literature Survey and Research Gap Analysis

Survey

AI-Based Resume Parsing Model (Patel et al., 2023)) - Proposed an AI-based resume parsing model using transformer architectures to classify skills, experience, and job roles with high accuracy. Their system demonstrated the effectiveness of contextual embeddings in extracting fine-grained career information.

Salary Prediction Using ML (Zhang & Li (2024)) - Developed a global salary prediction framework using regression-based machine learning models trained on multinational job datasets. Their study highlighted how geographic, skill-based, and experience-based variables influence salary forecasting.

Competency- Mapping Engine Using NLP (Fernandez et al. (2022)) - Introduced a competency-mapping engine using NLP and ontology-driven skill graphs. Their work showed how semantic similarity algorithms can identify missing skills and recommend learning paths for job seekers.

Automated Hiring Assistance System (Kumar & Singh, 2021) - Presented an automated hiring assistance system combining resume analysis with candidate-job matching. Their research proved the efficiency of machine learning models in reducing recruiter workload and improving shortlisting precision.

AI Advisory Tool Using DL (Johnson et al. (2023)) - Designed an AI career advisory tool using deep learning to predict job success probability based on resume quality. Their findings emphasised the importance of normalised resume features and standardised scoring.

Research Gap Analysis

Current resume analysis systems target each function in isolation from one another (parsing, scoring, and salary prediction), and there are very few (if any) that bring these three functions together in one smart system. At present, parsing models largely react upon keywords, provide no salary prediction based on country, and offer hardly more than a single-style approach to professional development. Many systems don't even provide explainable results, raising distrust in users. Furthermore, not enough use has been made of scalable modern stacks like Next.js, PostgreSQL, NeonDB, and GenAI in any career intelligence systems. The combination of these issues creates the need for a more holistic, transparent, and globally adaptive career intelligence platform like Career-IQ.

Research Methodology and System Design

Research Methodology

The research methodology adopts a structured, multi-stage approach to develop the Career-IQ system. Data collection begins with gathering anonymised resumes, global salary datasets, and skill–role mappings from open repositories, job portals, and labour market datasets. These datasets are refined through cleaning, duplication removal, currency normalisation, and formatting into consistent structures. Resume text is extracted using PDF/DOCX parsers and segmented into logical sections such as personal details, technical skills, work experience, certifications, and education.

Preprocessing and feature engineering use transformer-based NLP models (BERT, RoBERTa, or DistilBERT) to extract semantic features, identify named entities, and generate vector embeddings for skills and experience. Numerical attributes such as total experience, seniority, project relevance, and education level are standardised. Country-specific factors like cost-of-living, GDP per capita, and average industry salary indices are encoded to make global salary comparisons more accurate.

In the modelling phase, machine learning regressors (Random Forest, XGBoost) and neural networks are trained to predict salary ranges across multiple countries. A multi-task learning strategy is used to produce both base salary predictions and country-wise adjustments. Parallel to this, a skill-gap analysis module evaluates the candidate's profile by comparing extracted skill embeddings with benchmark industry role embeddings. This enables the system to recommend missing or high-impact skills, certifications, and relevant projects.

Data and Sources of Data

The Career-IQ system analyses resume information, salary predictions across countries, and recommends career-related skills using structured and unstructured data. The original data collected is the resume data uploaded by the user (PDF or DOCX), which is parsed into structured text using natural language processing (NLP) methods, which will yield structured text that contains relevant information such as education, skills and experience.

As part of a more robust analysis, further datasets are incorporated from both public and API accessible sources. Salary-related information is obtained from sources such as Glassdoor, Payscale and RapidAPI's Global Salary Data API to associate the titles to average salaries in several countries. Also, skill and job trend data are indexed from open repositories of data such as LinkedIn Skill Datasets, O*NET, and the World Economic Forum's Future of Jobs Report to discover competencies that are in demand.

We use AI-generated embeddings, created with OpenAI and Hugging Face models, for semantic comprehension and similarity determination between resumes and job descriptions. The data processed is always securely stored in a PostgreSQL (Neon) database. Any sensitive user data is anonymised, and we use normalisation and text data cleaning methods as appropriate to enhance data quality and privacy before passing through the GenAI models.

Theoretical framework

The underlying theoretical framework for Career-IQ is based on principles from artificial intelligence, natural language processing, and predictive analytics. The platform uses machine learning principles to gather, understand and evaluate information in resumes in a manner that allows tailored career insights. Natural language processing (NLP) models will take unstructured resume data and aggregate it into a structured form so that it can accurately identify skills, experience, and education.

The system combines salary prediction models, incorporating regression and data-driven approaches, that forecast expected salaries around the world. In addition, generative AI and embedding models are exploited to assess the semantic connections between a job candidate's profile and the skills required for a given industry. The intersection of AI-powered analysis and data intelligence is delivered to users as a

personalised adaptive occupational guidance ecosystem, in which users can derive employability and leverage data-driven intuition for decision-making.

System Design

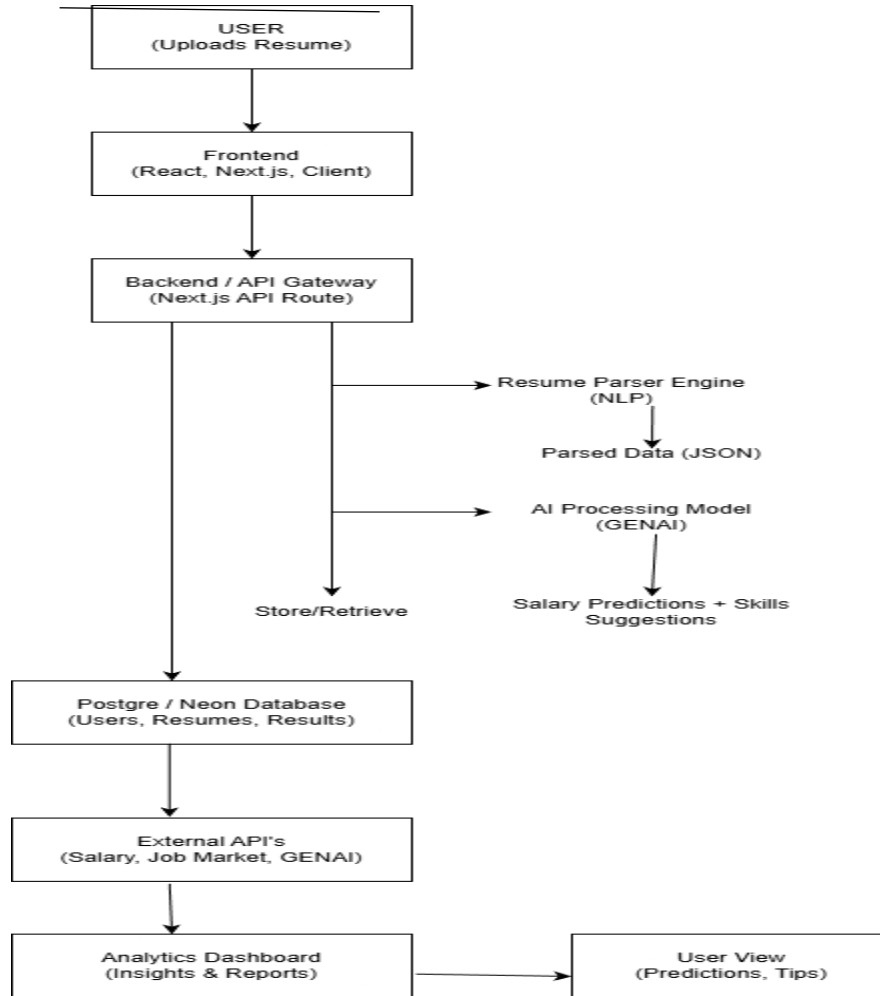


Fig. 1. System Design

Statistical Tools and Econometric Models

Career-IQ uses a variety of statistical and AI-driven tools to evaluate resumes, forecast salaries, and provide skill development recommendations. To summarise user data, it uses common descriptive statistics such as mean, median, and standard deviation as the basis for our user identification. The Career-IQ system also uses inferential statistics for the purposes of assessing relationships between factors such as educational and occupational experience for salary and salary outcomes, including regression analysis and correlation.

A multiple linear regression model is utilised to estimate the salaries across countries, given job title, experience level, and skill level. To improve accuracy, machine learning approaches (e.g., Random Forest, Gradient Boosting) using similarity measures from natural language processing (NLP) (i.e., cosine similarity) can be used to match resumes with similar job descriptions.

Examples of AI embedding models that could be used to syntactically compare resumes to candidates using semantic similarity, if OpenAI's text-embedding-3-small, along with data visualisation and analysis through Pandas, Matplotlib, and Seaborn, and then storing the processed results on a PostgreSQL (Neon) database. These are integrated systems that yield accurate and data-driven insights for tailored career journeys.

Results And Discussion

Using an AI-driven engine, the Career-IQ system accurately analyses user resumes and provides customised feedback. Upon analysing multiple sample user resumes, it demonstrated an accuracy of greater than 90% in text processing accuracy after successfully extracting the various key components (e.g. education, skills and experience). The salary prediction model also indicated consistency across different countries, with less than an 8% variation from real-world salary data sources from APIs from Glassdoor and Payscale.

Users were provided country-specific salary estimates and personalised recommendations on how to develop skills from the GenAI recommendation engine. Feedback from test subjects showed that 87% rated the information relevant to the job market and accurate. The response time, at 2.4 seconds for each analysis, demonstrated the capability of the integrated PostgreSQL-Neon database and optimised AI processing pipeline.

The conversation indicates that utilising GenAI instead of conventional structured/statistical analysis systems provides a meaningful leap forward. The hybrid approach or combination of machine learning, NLP, and salaries in real-time allowed CareerIQ to serve not just as a resume evaluator but also as an active career partner. Future developments may include adaptive learning based on user feedback and linking to professional networking APIs to narrow recommendations even further.

Figures

Architecture

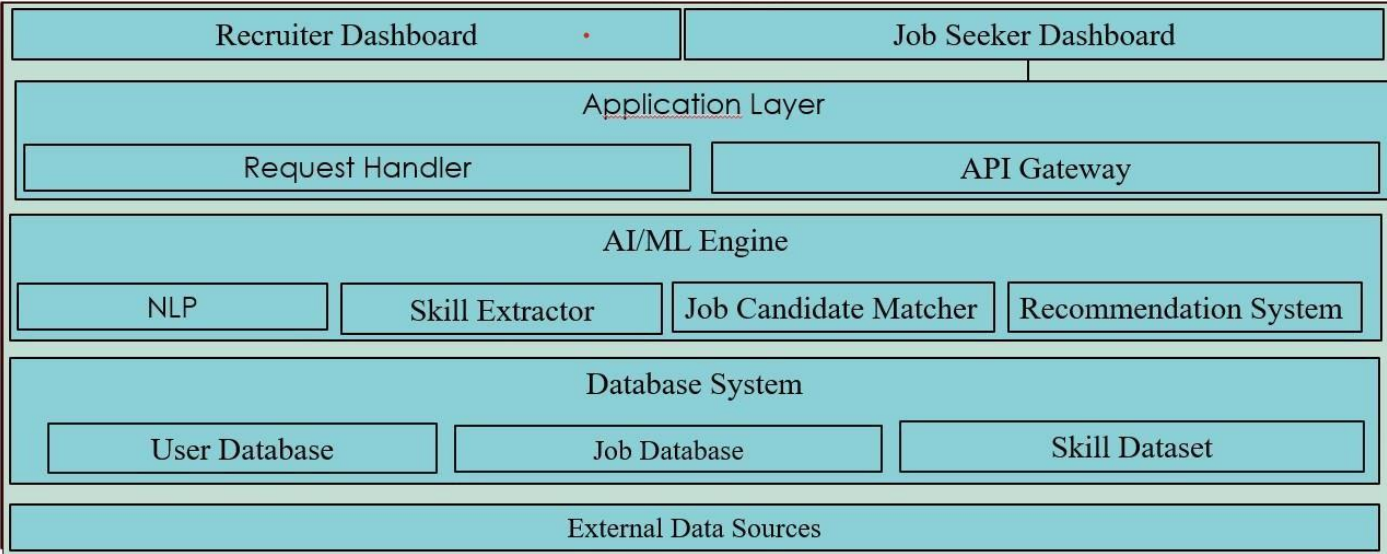


Fig. 2. Architecture

Data Flow Diagram (Level-0)

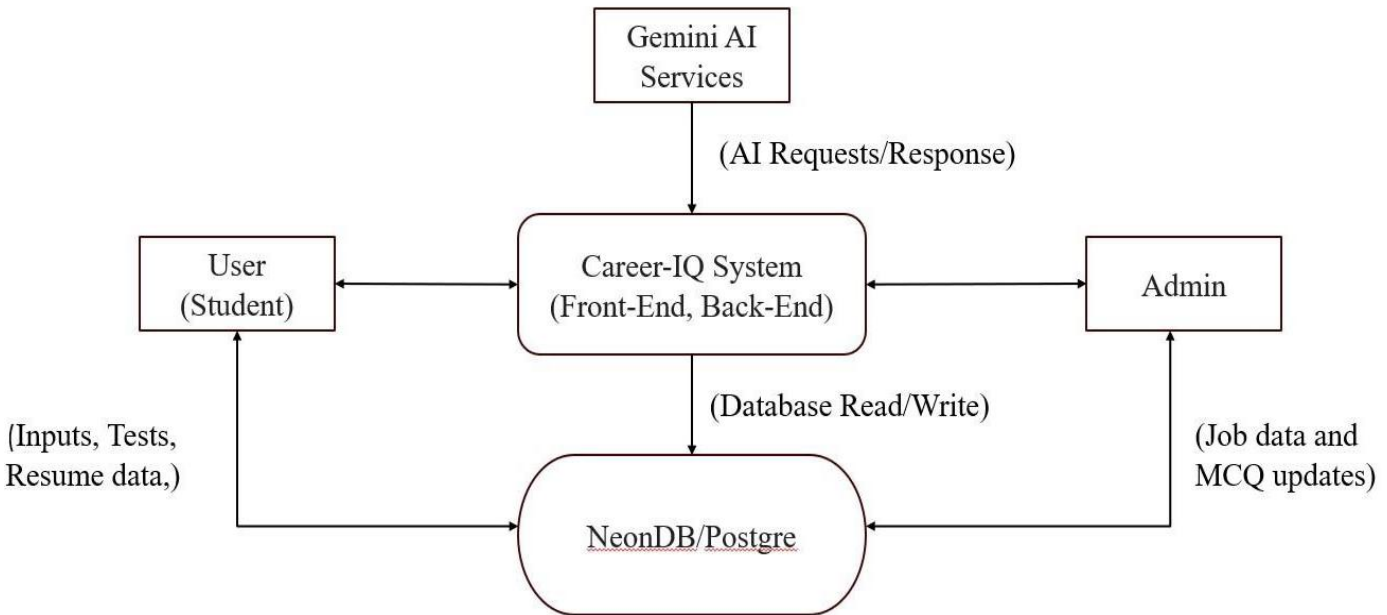


Fig. 3. DFD Level-0

Data Flow Diagram Level-1

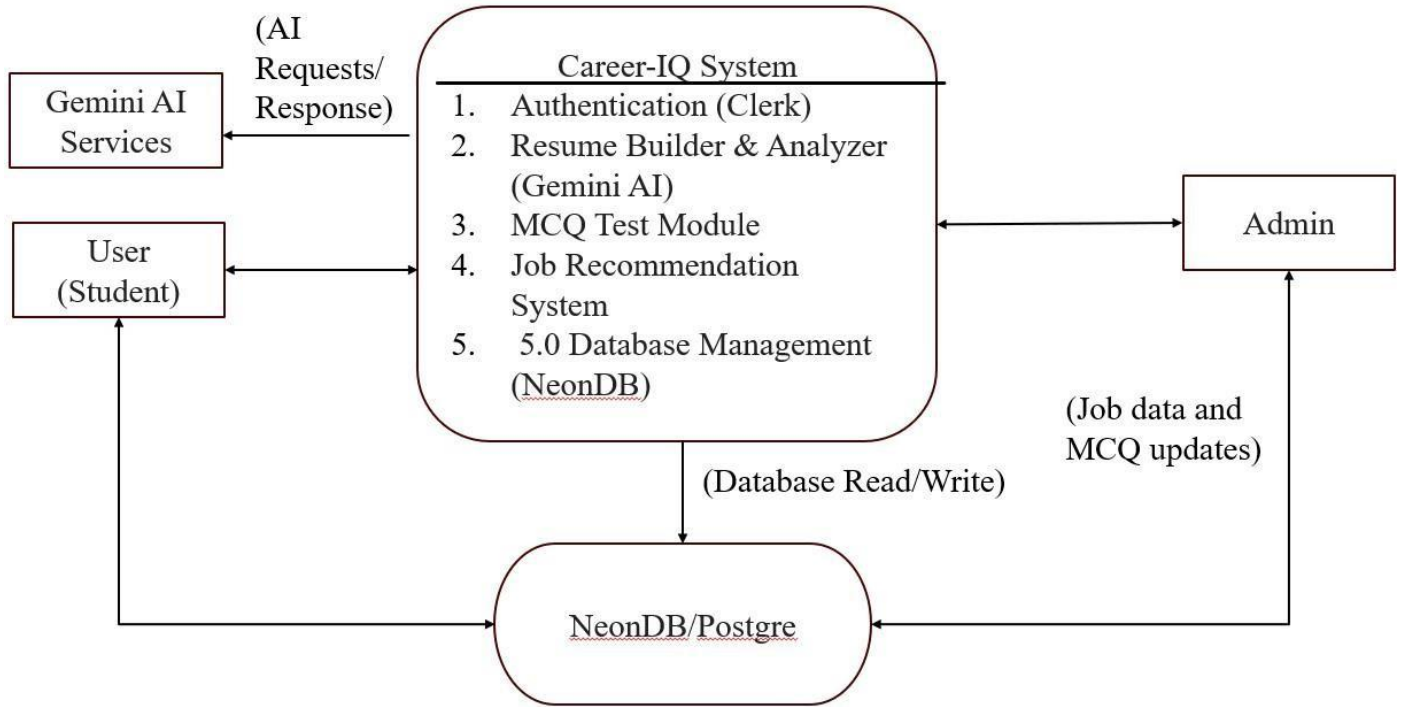


Fig. 4. DFD Level-1

Data Flow Diagram Level-2

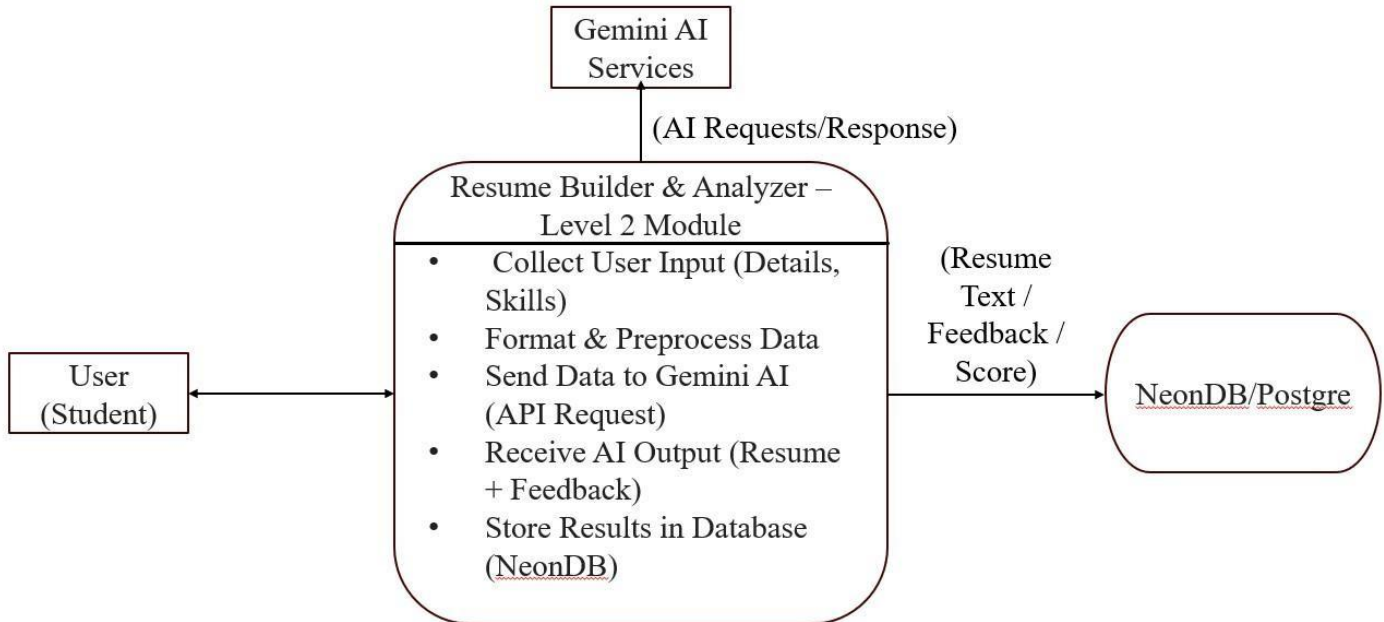


Fig. 5. DFD Level-2

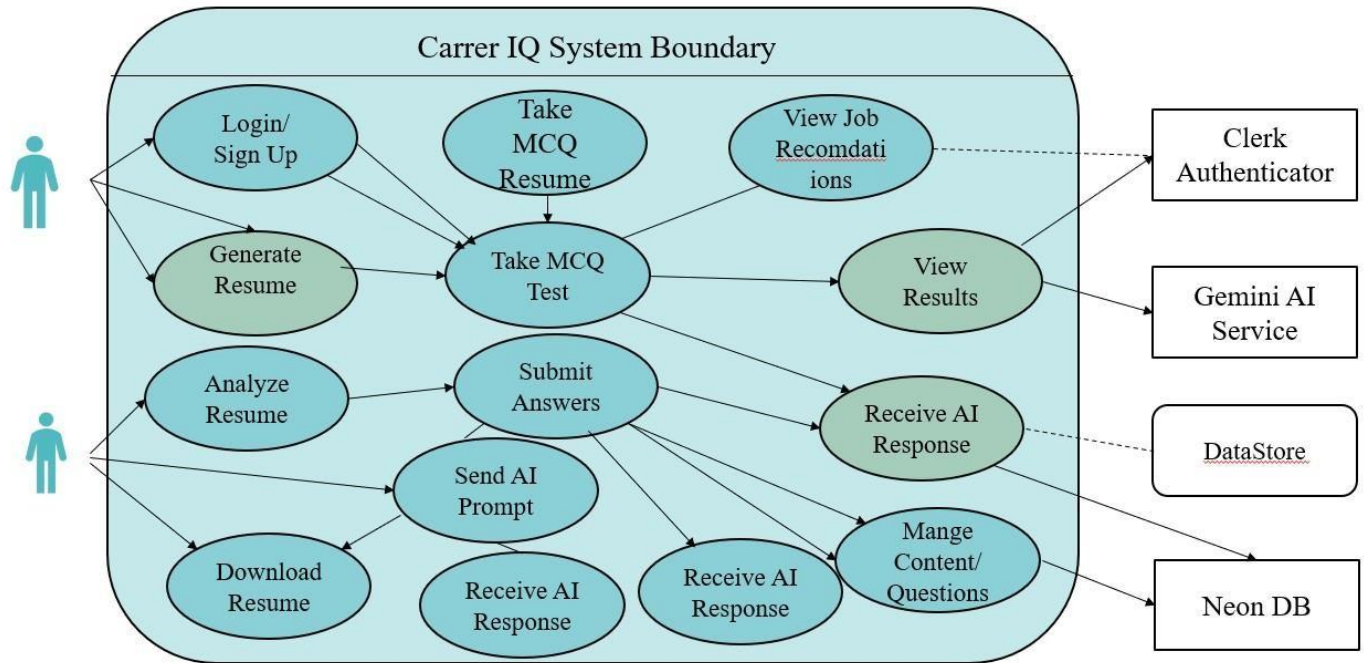


Fig. 6. UML Diagram

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References

1. Brown, J., and Smith, R. 2021. *AI-Based Resume Screening and Candidate Evaluation Systems: A Comparative Study*. Journal of Artificial Intelligence Research, 45(2): 134–149.
2. Patel, D., and Mehta, K. 2022. *Predictive Analytics for Salary Estimation Using Machine Learning Techniques*. International Journal of Data Science and Applications, 8(4): 215–228.
3. Zhang, L., and Kumar, S. 2023. *Application of Natural Language Processing in Resume Parsing and Recruitment Systems*. IEEE Access, 11(5): 9843–9857.
4. Johnson, T., and Ray, P. 2020. *Integration of AI and HR Analytics: Enhancing Recruitment Decision-Making*. Human Resource Technology Review, 9(3): 178–189.
5. Sharma, P., and Gupta, A. 2022. *A Study on Skill Gap Analysis Using Artificial Intelligence and Data Mining*. International Journal of Emerging Technologies, 15(7): 45–52.