Project Work Title: AI Resume Analyzer

Course No: BSDCH ZC499T

Course Title: Capstone Project

Work Done by:

Student Name: Araveeti Ashok Kumar

BITS ID: 202117BH068

Degree Program:

Work-Integrated Learning Programmes Division

Dissertation / Project Work carried out at:

HCL Technologies LTD, Vijayawada

BIRLA INSTITUTE OF TECHNOLOGY & SCIENCE, PILANI

VIDYA VIHAR, PILANI, RAJASTHAN - 333031.

August 2025

Contents

1. Broad Area of Work

This project focuses on building an AI-powered Resume Analyzer using free and open-source tools. It will help users upload their resumes, match them with specific job descriptions, and get clear feedback on strengths, gaps, and areas for improvement. The platform will be simple to use and will cut down the time needed for resume evaluation. By using open-source NLP models, the project avoids costs while still delivering accurate and reliable results. The system will be designed to grow over time, allowing more features to be added easily.

2. Background

In today's competitive job market, both hiring managers and job seekers face significant challenges during the recruitment process. Recruiters often receive hundreds of applications for a single position, making it time-consuming to manually review each resume. In this process, important details such as relevant skills, certifications, or achievements can easily be overlooked. Furthermore, manual screening is not always objective; personal preferences or unconscious bias may influence the evaluation, leading to unfair selection outcomes.

From the job seeker's perspective, crafting an effective resume that stands out to employers is equally challenging. Many applicants are unaware of how to tailor their resumes to match a specific job description. As a result, even qualified candidates may fail to get shortlisted because their resumes do not highlight the right keywords or align with the recruiter's expectations.

This project aims to address these issues by leveraging Artificial Intelligence (AI) and Natural Language Processing (NLP) to create a smart, automated resume analyzer. The system will be capable of reading and interpreting the content of resumes with high accuracy, identifying key information such as skills, work experience, and educational qualifications. It will then compare this data against a target job description to determine how well the candidate fits the role.

Beyond simple matching, the system will also suggest missing keywords, highlight potential skill gaps, and provide a clear, easy-to-understand score that allows quick comparison between candidates. Users will also be able to choose from a set of preset job descriptions for faster evaluation. By automating these steps, the project will help recruiters save valuable time, ensure a more objective screening process, and assist job seekers in improving their resumes for better career opportunities.

3. Objectives

The main objective of this project is to develop a user-friendly tool that streamlines resume analysis. The system will automatically extract key information such as skills, educational background, and work experience from uploaded resumes. It will then compare this data with job descriptions to generate a score that reflects how well the candidate matches the role. Alongside the scoring feature, the tool will suggest practical ways to improve the resume for better alignment with job requirements. It will support multiple job roles with ready-to-use templates and be compatible with common file formats such as PDF and DOCX. Importantly, the project will rely entirely on free and open-source tools to ensure accessibility and cost efficiency.

4. Scope of Work

The scope of this project includes developing a backend system using Python and Natural Language Processing (NLP) libraries to process and analyze resume data. A simple, web-based interface will be designed to allow users to upload resumes and view results. The system will include a dedicated module for matching resumes against job descriptions, as well as a scoring and feedback engine that provides clear improvement suggestions. To ensure user trust, data security and privacy will be a top priority. Additional features will include report generation for both recruiters and job seekers, enabling more informed hiring decisions. The system will be thoroughly tested using various sample resumes and job roles to validate its accuracy and effectiveness.

5. Plan of Work

Phase	Start Date – End Date	Work to be done
Research & Requirement Gathering	July 20 – July 27, 2025	Conduct research on AI resume analyzers, review existing solutions, finalize scope, objectives, and select open-source NLP tools.
Project Outline Preparation & Submission	July 28 – August 4, 2025	Prepare project outline with planned features, architecture, and deliverables; upload outline and mentor evaluation sheet to portal.
System Design & Initial Development	August 5 – August 20, 2025	Design system architecture, create UI wireframes, and develop backend modules for resume parsing and job description matching.
Feature Integration & Mid-Semester Review	August 21 – September 1, 2025	Integrate frontend and backend, add scoring & improvement suggestions, conduct internal testing, submit mid-semester report, and deliver presentation.
Final Development & Testing	September 2 – September 20, 2025	Implement additional features, ensure data security, perform full system testing, and optimize for performance.
Review, Final Submission & Demonstration	September 21 – October 1, 2025	Mentor review, final refinements, prepare final report and presentation, and submit all required documents to the portal.

6. Literature References

1. spaCy Documentation - https://spacy.io/
2. scikit-learn Documentation - https://scikit-learn.org/
3. NLTK Documentation - https://www.nltk.org/
4. Hugging Face Transformers - https://huggingface.co/docs/transformers/

7. Particulars of the Mentor and Examiner

	Mentor	Additional Examiner
Name	Sudipta Mazumdar	Daivala Veera Venkata Satyanarayana
Qualification	MCA	B.Sc
Designation	Group Project Manager	Technical Lead
Employing Organization and Location	HCLTech, Bangalore	HCLTech, Vijayawada
Phone No.(with STD Code)	+91 9886752081	+91 9494999767
Email Address	Sudipta.Mazumdar@hcltech.com	Daivala.Veera@hcltech.com

8. Remarks of the Mentor

The project he chose seemed good. He invested time in learning the required skills and successfully applied them to the project. I was impressed when he shared the idea, and after discussing it with my superiors, they encouraged me to fully support him. Despite having regular office tasks, he is managing well in getting this project completed. I hereby give my approval for the project and wish him the best for the demonstration.

Information about the Mentor: Sudipta Mazumdar, Group Project Manager, HCLTech, Bangalore.

BIRLA INSTITUTE OF TECHNOLOGY & SCIENCE, PILANI WORK INTEGRATED LEARNING PROGRAMMES (WILP) DIVISION
Capstone Project

BSDCH ZC499T: AI Resume Analyzer

STUDENT ID No.	202117BH068
NAME OF THE STUDENT	Araveeti Ashok Kumar
STUDENT'S EMAIL ADDRESS	202117BH068@wilp.bits-pilani.ac.in
STUDENT'S EMPLOYING ORGANIZATION & LOCATION	HCLTech, Vijayawada
MENTOR'S NAME	Sudipta Mazumdar
MENTOR'S EMPLOYING ORGANIZATION & LOCATION	HCLTech, Bangalore
MENTOR'S EMAIL ADDRESS	Sudipta.Mazumdar@hcltech.com
ADDITIONAL EXAMINAER'S NAME	Daivala Veera Venkata Satyanarayana
ADDITIONAL EXAMINER'S EMPLOYING ORGANIZATION & LOCATION	HCLTech, Vijayawada
ADDITIONAL EXAMINER'S EMAIL ADDRESS	Daivala.Veera@hcltech.com
DISSERTATION / PROJECT / PROJECT WORK TITLE	AI Resume Analyzer

Ashok Kumar	Sudipta Mazumdar	Daivala Veera Venkata Satyanarayana
Signature of Student	**Signature of Mentor**	**Signature of Additional Examiner**
Name: Araveeti Ashok Kumar	**Name: Sudipta Mazumdar**	**Name: Daivala Veera Venkata Satyanarayana**

Birla Institute of Technology & Science, Pilani
Work Integrated Learning Programmes Division

BSDCH ZC499T: Capstone Project EC-1: Capstone Project Outline Evaluation Sheet

STUDENT ID No.	202117BH068
NAME OF THE STUDENT	Araveeti Ashok Kumar
STUDENT'S EMAIL ADDRESS	202117BH068@wilp.bits-pilani.ac.in
STUDENT'S EMPLOYING ORGANIZATION & LOCATION	HCLTech, Vijayawada
MENTOR'S NAME	Sudipta Mazumdar
MENTOR'S EMPLOYING ORGANIZATION & LOCATION	HCLTech, Bangalore
MENTOR'S EMAIL ADDRESS	Sudipta.Mazumdar@hcltech.com
DISSERTATION / PROJECT / PROJECT WORK TITLE	AI Resume Analyzer

DESIGN PROJECT OUTLINE EVALUATION

(Please put a tick (✔) mark in the appropriate box)

EC No.	Component	Excellent	Good	Fair	Poor
1.	Capstone Project Outline	✔			

	Mentor	Additional Examiner
Name	Sudipta Mazumdar	Daivala Veera Venkata Satyanarayana
Qualification	MCA	B.Sc
Designation	Group Project Manager	TECHNICAL LEAD
Employing Organization and Location	HCLTech, Bangalore	HCLTech, Vijayawada
Phone No.(with STD Code)	+91 9886752081	+91 9494999767

Email Address	Sudipta.Mazumdar@hcltech.com	Daivala.Veera@hcltech.com
Signature	Sudipta Mazumdar	Daivala Veera Venkata Satyanarayana
Date	6th August 2025	6th August 2025

Email Approval from Mentor:

Outlook

RE: Capstone Project Outline Approval

From Sudipta Mazumdar (HCL Financial Services) <Sudipta.Mazumdar@hcltech.com>
Date Wed 2025-08-06 10:27
To   Araveeti Ashok Kumar <araveeti.ashokkumar@hcltech.com>

Classification: **Internal**

Hi Ashok,

The project looks good. I approve it.

Grade : Excellent

Thanks & Regards,
Sudipta Mazumdar
HCLTech

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Mob: +91 9886752081

From: Araveeti Ashok Kumar <araveeti.ashokkumar@hcltech.com>
Sent: Tuesday, August 5, 2025 10:43 AM
To: Sudipta Mazumdar (HCL Financial Services) <Sudipta.Mazumdar@hcltech.com>
Cc: Araveeti Ashok Kumar <araveeti.ashokkumar@hcltech.com>
Subject: Capstone Project Outline Approval

Hi Sudipta

The outline document for our B.Sc Capstone project is attached, as previously communicated. Kindly review them and provide any comments. Please assist in completing the 'Remarks of Mentor' section and please e-sign the document in the designated black column at the end.

Title: AI Resume Analyzer
Abstract: This project presents an AI-powered Resume Analyzer that uses open-source Natural Language Processing tools to automatically evaluate resumes against job descriptions. It provides match scores, highlights missing keywords or skills, and offers actionable suggestions to improve resume quality — helping both recruiters and job seekers streamline the hiring process efficiently and objectively.

Thanks & Regards,