AI Resume Maker

Course Code & Name: CSC301 - Seminar

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Date: [01/05/2025]

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1. Introduction

- Brief Overview:
  This project focuses on building an AI-powered resume generator that transforms unstructured, paragraph-style user input into structured resume data using Large Language Models (LLMs).

- Purpose and Objectives:
  The goal is to automate and simplify resume creation using AI. Key objectives include:

  - Extracting structured data from user input.
  - Allowing user edits through a dynamic form.
  - Generating a formatted resume that can be exported.

- Scope and Limitations:
  Scope: Resume generation from paragraph input, real-time form editing, and PDF output.
  Limitations: Currently deployed locally; uses a single resume template; accuracy of AI parsing depends on prompt quality.

- Significance of the Study:
  Helps job seekers quickly generate professional resumes without requiring formatting or writing expertise. Demonstrates practical use of LLMs and full-stack development.

2. Background / Literature Review

Relevant Background:
Traditional resume builders require users to manually enter data. AI provides a way to automate this by interpreting natural language descriptions.

Key Findings from Past Research:
Studies show LLMs like ChatGPT and DeepSeek can perform well in information extraction and text classification tasks.

Theoretical Framework:
Based on NLP concepts such as Named Entity Recognition (NER), prompt engineering, and structured data mapping.

Recent Advancements:
The emergence of open-source LLM hosting (Ollama) and lightweight frontend tools (Vite, DaisyUI) enables fast prototyping of intelligent applications.

3. Research Methodology

Data Collection Methods:
Case study approach using user-generated paragraph inputs and observing the accuracy of AI-generated JSON.

Tools and Techniques:

- Ollama with DeepSeek/ChatGPT for AI-based JSON extraction.
- Spring Boot for API and backend logic.
- ReactJS, TailwindCSS, and DaisyUI for the frontend.
- JSON used as the data format for frontend-backend communication.

Sampling and Data Sources:
Test cases created with different user profiles and descriptions (e.g., John Cena demo input).

Justification:
Using AI models for information extraction reduces the need for manual tagging or form-filling, improving user experience and efficiency.

4. Findings & Analysis

Key Findings:

- AI can effectively parse paragraph input into resume fields like name, email, education, and experience.
- Accuracy improves with refined prompt design.
- Users found the editable form convenient and intuitive.

Discussion:
Performance is influenced by how structured or vague the input paragraph is. Most resumes generated required minimal manual edits.

Comparison with Previous Tools:
Compared to drag-and-drop resume builders, this method offers faster and more intelligent data capture.

5. Conclusion & Recommendations

Summary:

The AI resume generator successfully automates resume creation with a novel user experience. The project integrates LLMs in a full-stack application with strong usability.

Applications:

Can be scaled for job portals, HR tools, or resume review services.

Limitations:

- Not yet cloud-deployed
- AI model may misinterpret ambiguous input
- Only one resume format available

Future Work:

- Add multi-template support
- Cloud deployment (e.g., via Render, Heroku, or AWS)
- Integrate grammar and tone suggestions using AI

6. References

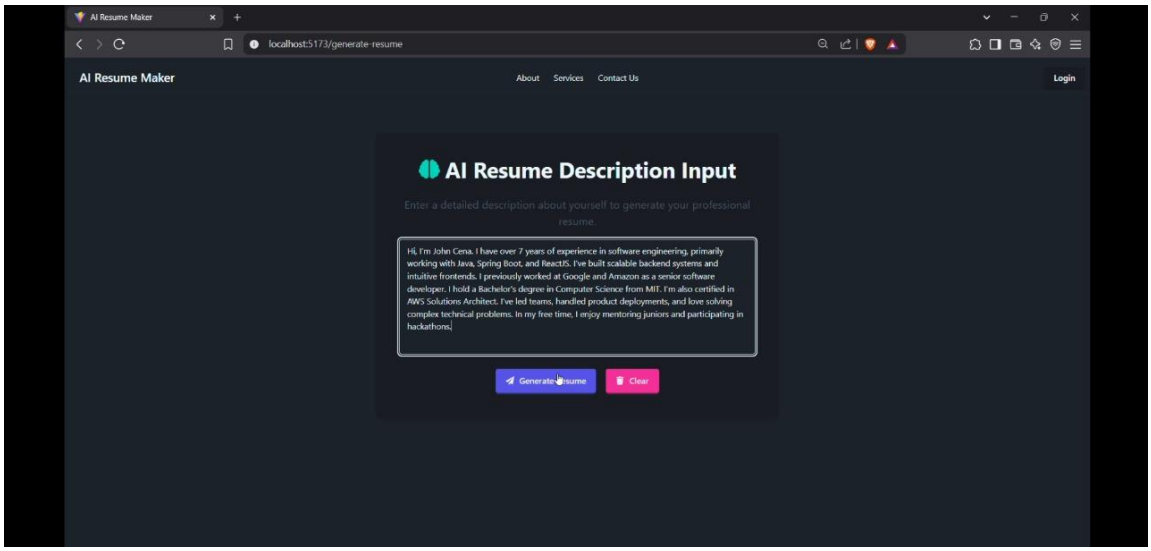
OpenAI. (2023). *ChatGPT Technical Report*. https://openai.com/research

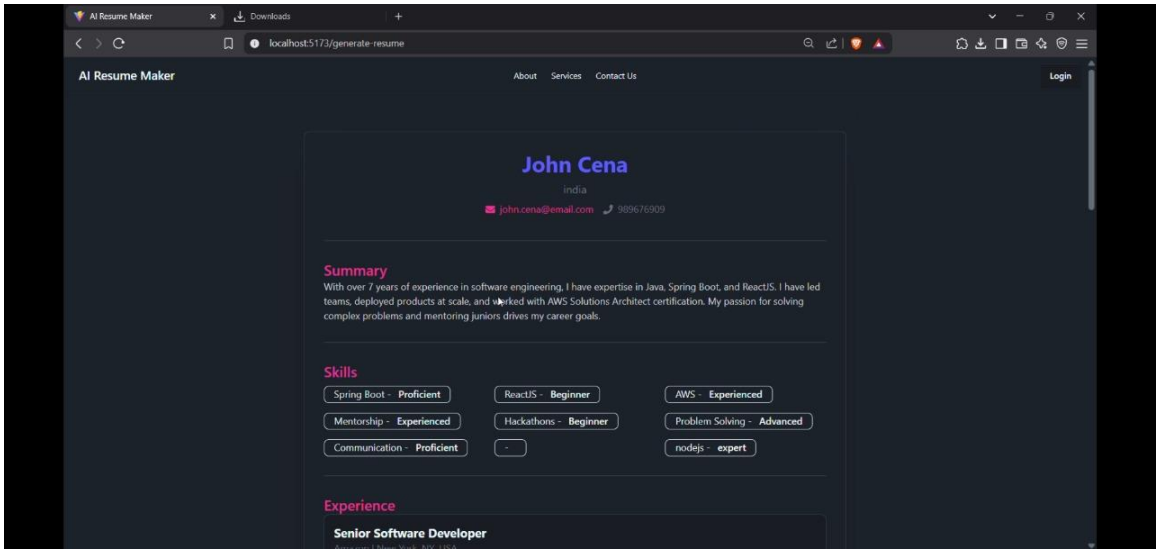
DeepSeek. (2024). *DeepSeek Model Overview*. https://deepseek.com/models

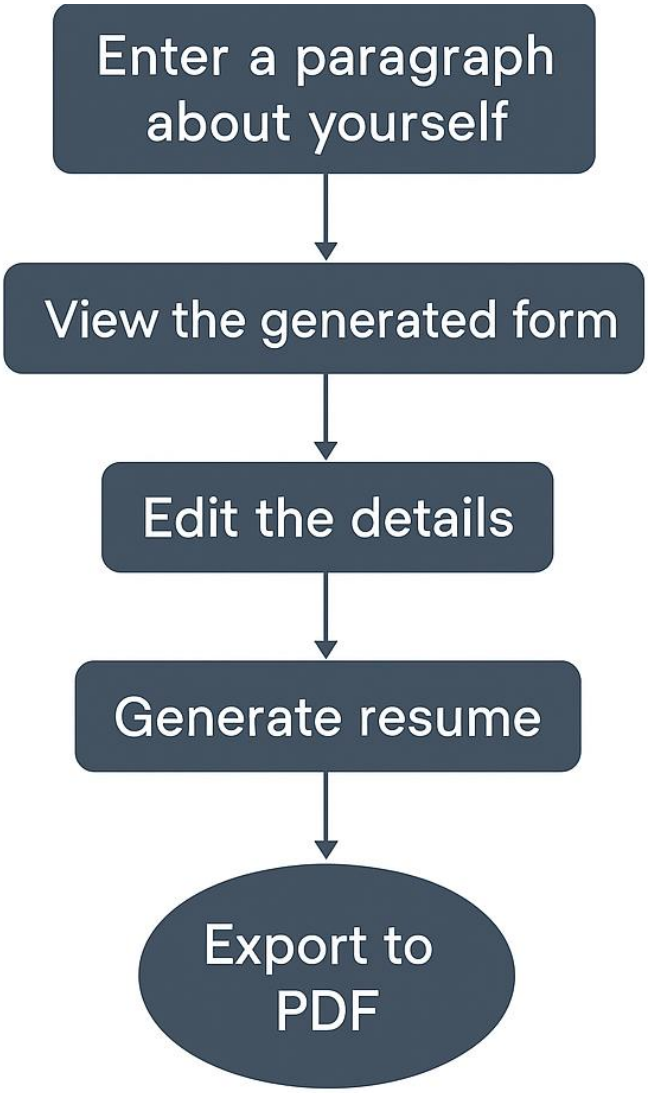
Spring Team. (n.d.). *Spring Boot Documentation*. https://spring.io/projects/spring-boot

React Docs. (n.d.). *React – A JavaScript library for building user interfaces*. https://reactjs.org

7. Appendices (if any)






Enter a paragraph about yourself
View the generated form
Edit the details
Generate resume
Export to PDF