ResumeUp

DESIGN DOCUMENT

sdmay24-05
Client: Elmin Didic
Advisor: Simanta Mitra

Team Members:
Elmin Didic: Team Lead
Nedim Hodzic: Back-end Lead
Mitchell Talyat: Project Organization
Nathan Boldt: Individual Component Design
Siddharthan Prakash: Documentation Lead
Nicholas Thomas: Client and Advisor Interaction

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Website: https://sdmay24-05.sd.ece.iastate.edu

Executive Summary

Development Standards & Practices Used

- Agile
- CI/CD
- Code Review
- Code Smells
- Commenting Code
- Meaningful Variable Naming
- OpenAI Usage Policies

Summary of Requirements

- Modern looking UI
- Create and export a resume
- Easy to use
- Accessible to people with disability
- Create Account
- Use ChatGPT to optimize a resume
- Functional Back-end
- Clean Code/Commented Code
- Good Documentation

Applicable Courses from Iowa State University Curriculum

- SE 309
- ENGL 314
- SE 363
- SE 319
- SE 317
- All Other SE/COMS Courses

New Skills/Knowledge acquired that was not taught in courses

- AWS
- Calling API's
- Artificial Intelligence Application
- Client and Advisor Communication

Table of Contents

List of figures/tables/symbols/definitions

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1 Team

1.1 Team Members

- Elmin Didic
- Nedim Hodzic
- Mitchell Talyat
- Nathan Boldt
- Siddharthan Prakash
- Nick Thomas

1.2 Required Skill Sets for Your Project

- JavaScript
- Node JS
- Java
- Python
- Typescript
- HTML / CSS
- Project Management
- UI Development
- SQL
- Front-end Development
- Back-end Development
- Problem-Solving Skills
- General Knowledge Surrounding Artificial Intelligence

1.3 Skill Sets covered by the Team

- JavaScript: Elmin, Nedim, Mitch, Nathan, Siddharthan, Nick
- Node JS, Nathan, Siddharthan, Nick
- Java: Elmin, Nedim, Mitch, Nathan, Siddharthan, Nick
- Python: Elmin, Nedim, Mitch
- Typescript: Elmin, Mitch Siddharthan, Nick
- Project Management: Elmin, Mitch
- UI Development: Nathan, Nedim
- SQL: Elmin, Siddharthan, Nedim
- Front-end Development: Nathan, Siddharthan, Nedim
- Back-end Development: Elmin, Mitch, Nick
- Problem-Solving Skills: Elmin, Nedim, Mitch, Nathan, Siddharthan, Nick
- General Knowledge Around AI: Elmin, Nedim, Mitch, Nathan, Siddharthan, Nick

1.4 Project Management Style Adopted by the Team

The project management style we will be utilizing is Agile. We went with an Agile format because we all have experience with it and are comfortable using it.

1.5 Initial Project Management Roles

- Dr. Mitra - stakeholder
- Nick, Nathan, Elmin, Nedim, Mitch, Sid - Product Owner
- Elmin - Project Manager / Client
- Nick, Nathan, Elmin, Nedim, Mitch, Sid - Project Team

2 Problem Statement, Requirements, and Engineering Standards

2.1 Problem Statement

In today's world, an effective resume is necessary to find any type of success in the job market. However, as many college students have found out, creating a concise yet detailed resume is almost impossible without putting in countless hours of work critiquing each section. Once you account for the constantly changing standards of a 'good' resume, creating a resume becomes much more daunting. Our team is focused on making a website that can help create resumes while using artificial intelligence to make decisions based on the current standards of resume building.

2.2 Requirements & Constraints

Functional:

- Resumes can be correctly parsed.
- AI can detect spelling/grammar errors in a resume.
- AI can offer feedback to each bullet to add better vocabulary.
- A user can upload a resume and receive all the feedback above, showing the amount of change in each area.
- Users can click a template and fill in their information, allowing a pre-made "good" resume.

Non-Functional:

- A user can view multiple different resumes and see examples of them.
- A user should be able to navigate the site and get through everything in under 2 minutes (login, resume template, suggestions, other).
- A user should be able to clearly see highlighted suggestions.
- A user should be able to see a score and reflect on what has changed.

Quantitative:

- The website will respond within 1 second of user input.
- The website will be hosted on a server with at least 90% uptime.
- The website will have 0 actions that cause the webpage to lock or freeze due to client-side operations.
- The code base will have at least 1 test for each function.

Qualitative:

- The user interface will be intuitive and easy to use.
- The user interface will be pleasing to the eye.
- The user interface will use modern interface design patterns.
- The website will use a minimal amount of memory.
- Resumes should be able to be parsed by workday without any user interference.

2.3 Engineering Standards

- **IEEE 828-2012 Configuration Management in Systems and Software Engineering:** This standard provides some requirements for configuration management. Since we are developing software, we need to ensure it is maintained properly and performs as expected over time, meaning we need good configuration management. Following these standards should help us achieve that.
- **29148-2018 - ISO/IEC/IEEE International Standard - Systems and software engineering -- Life cycle processes -- Requirements engineering:** This standard will serve as a guide for good requirements definition on the software and how to apply these requirements effectively on the web application.
- **W3C Standards for Web Design and Application and Web Architecture:** This is a helpful resource for standards or recommendations for web development. The standards/recommendations regarding mobile web interface, APIs, HTML, CSS, and HTTP will be helpful for this project.

2.4 Intended Users and Uses

Anyone with a resume who wants to strengthen it will benefit from ResumeUp. Every job seeker will benefit from our AI-powered tool. The users will be able to upload their resumes to our web app and receive real-time feedback on what areas need improvement, like adding stronger vocabulary.

Use Cases:

- **Resume Optimization:** AI can analyze a resume and provide suggestions for improving its content. This could be anything from grammar to formatting issues and stronger vocabulary options.
- **Keyword Optimization:** AI can scan job descriptions and compare them to a user's resume to identify missing keywords or skills. This offers better vocab for certain positions they might be applying for.
- **Grammar and Spelling Checks:** AI can perform thorough grammar and spelling checks to ensure the resume is error-free.
- **Content Suggestions:** The tool can suggest additional information or achievements that may enhance the resume's impact. This could be from personal projects to actual on-the-job achievements.
- **Formatting Assistance:** AI can help users with formatting choices such as font selection, bullet points, and section titles to create a clean and professional document based on given resume templates.

3 Problem Statement, Requirements, and Engineering Standards

3.1 Task Decomposition

Task 1: Complete experiments involving key components of the project

Some experiments include PDF parsing, OpenAI API Calls, hosting on AWS, and grading resumes. This task allows us to find the most efficient ways to work with each component and get all the team members involved with different sections of the project.

Task 2: Create baseline UI and rough sketch

Create a Figma file or a hand-sketched drawing of what we want the screens to look like. Drawing these out gives the team an idea of what we are working towards and can spark conversations leading to improvements in the system.

Task 3: Bring OpenAI API calls into the back-end

Based on experiments with the OpenAI API calls from task 1, bring those calls into the official project, allowing them to be used within the site. This is necessary to fulfill the requirement of using AI to improve a user's resume.

Task 4: Create resume forms on the front-end for users to fill out

These forms should have different input sections, allowing the user to fill out the information that belongs in each section of a resume. These sections could include education, work experience, personal projects, volunteering, extracurricular activities, skills, etc.

Task 5: Create different resume templates to choose from

We want the user to be able to choose what their resume looks like, and we don't want each resume created by our website to look identical, so we need to make different resume templates that the user can choose from. These templates can be taken from the internet or created by our team. There should be at least three templates available, but if time allows, we can include more.

Task 6: Allow front-end to parse a user form and put info into the selected template

When the user inputs their information in the forms from task 5, we need the website to take that information and place it into the template that the user selected. To do this, we need to let the system understand the information it is receiving and sort it accordingly. Each template may need different parsing techniques, and different information will create different resumes, given that some sections may be blank or have less information.

Task 7: Create a list of criteria that a resume can be graded on

Similarly to how Grammarly grades a document, we want a grading system with different categories to show users how good or bad a resume is. This will allow us to show improvement when we let the AI create a new resume. These categories will need to be decided by the team officially, but could include grammar/spelling, use of good verbs, layout, etc.

Task 8: Calculate ways to assign values to the criteria

Once we decide on the different criteria areas, we will need to find a way for the system to automatically grade different resumes based on those criteria. These calculations will likely involve parsing through the text, looking for inconsistencies, and then defining an equation to obtain an actual value for each category.

Task 9: Display the graded original resume

After finding these values, we want the website to show the generated resume to the user and the grade it has received. This will allow the user to see the baseline result that will be compared to the AI-generated result later.

Task 10: Get suggestions for improvement from AI

We will need to use the OpenAI API calls to make requests to ChatGPT and ask it for suggestions based on the baseline resume. We will then need to take the AI's answer and provide it back to the user in a readable format.

Task 11: Generate a new resume with given AI suggestions

With these suggestions from the AI, we can refine the current resume and make the requested adjustments. This will fulfill the requirement of an AI adjusting a resume to improve the overall result.

Task 12: Display comparison between two resumes

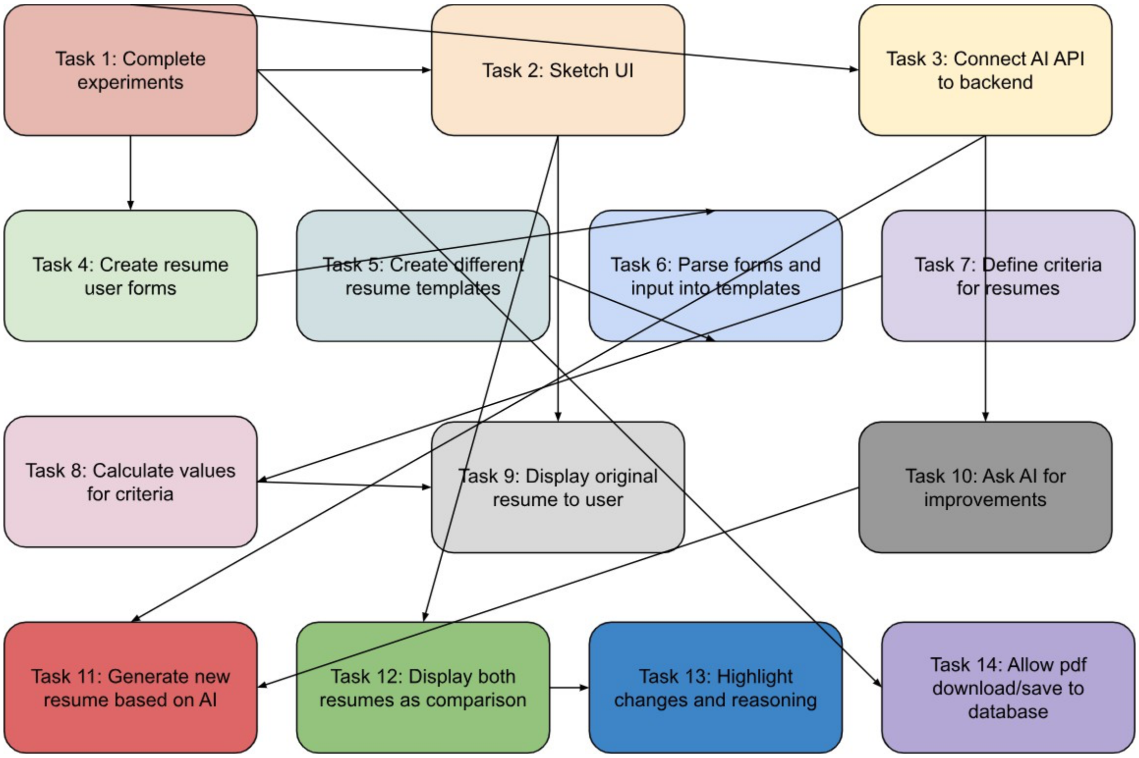
Once we have the newly generated resume with the AI's suggested changes, we need to display the two resumes side by side to the user. We also need to show the new score for the new resume, ideally showing an increase in value from the original result.

Task 13: Find and highlight changes made, as well as why it was an improvement

When displaying the two resumes side by side, it will be helpful to show the user where the changes were made and how each change affected the overall score. The user should be able to hover over the highlighted changes and see the change in score for each highlight.

Task 14: Download and save the resume on the website

Finally, the user will be able to download the resume to their system, meaning we will need a way to convert the resume to a PDF file and export it. Also, we need to be able to save the generated resume to the database and link it to the signed-in user's account so they can come back another time and see it again.


Task 1: Complete experiments
Task 2: Sketch UI
Task 3: Connect AI API to backend
Task 4: Create resume user forms
Task 5: Create different resume templates
Task 6: Parse forms and input into templates
Task 7: Define criteria for resumes
Task 8: Calculate values for criteria
Task 9: Display original resume to user
Task 10: Ask AI for improvements
Task 11: Generate new resume based on AI
Task 12: Display both resumes as comparison
Task 13: Highlight changes and reasoning
Task 14: Allow pdf download/save to database

3.2 Project Management/Tracking Procedures

We have decided to take on an agile project management style. Our agile framework will be Kanban. We picked Kanban because our project was self-proposed, so we set our own deadlines. We also know that our schedules are not all in line, and this will allow people to pick tasks that they can accomplish for the week and allow us to see what others are working on. Another reason is that people do not get stuck working on a single part of the system and can hop around freely. Our sprints will be every two weeks, aligning with our advisor meeting.

The team has decided to limit the number of services we use to manage our project to avoid confusion. For communication, we have utilized Discord and created a server to manage important links and client and TA communications. We manage our project documentation in a shared Google Drive file, and task management is done in the GitLab repository.

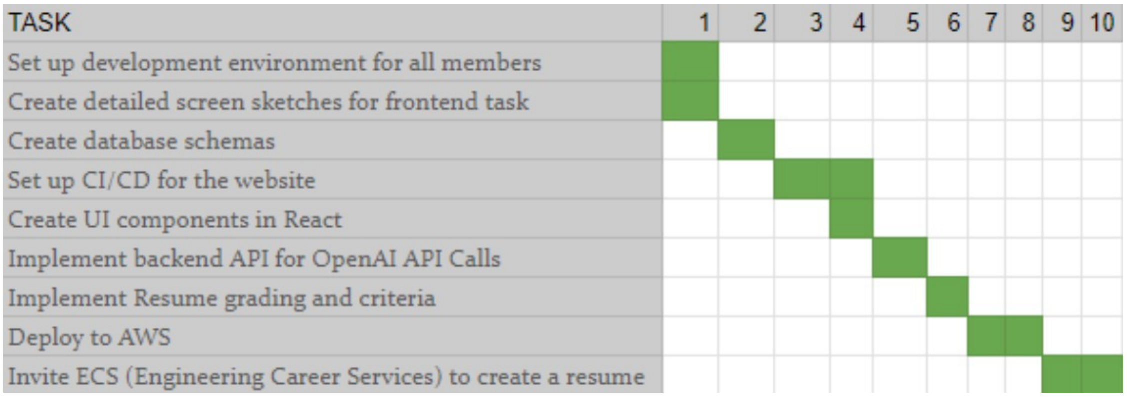
3.3 Project Proposed Milestones, Metrics, and Evaluation Criteria

Milestones:

1. Set up development environment for all members
2. Create detailed screen sketches for front-end
3. Create database schemas
4. Set up CI/CD for the website
5. Create UI components in React
    a. User Log in
    b. Resume Display
    c. Resume Grading

6. Implement back-end API for OpenAI API Calls
7. Implement Resume grading and criteria
8. Deploy to AWS
9. Invite ECS (Engineering Career Services) to create a resume

3.4 Project Timeline/Schedule



TASK	1	2	3	4	5	6	7	8	9	10
Set up development environment for all members	🟩									
Create detailed screen sketches for frontend task	🟩									
Create database schemas		🟩								
Set up CI/CD for the website			🟩	🟩						
Create UI components in React				🟩						
Implement backend API for OpenAI API Calls					🟩					
Implement Resume grading and criteria						🟩				
Deploy to AWS							🟩	🟩		
Invite ECS (Engineering Career Services) to create a resume									🟩	🟩

3.5 Risks And Risk Management/Mitigation

Risks	Risk Probability	Mitigation
Poor time management and missing desired deadlines	0.2	As a team, we have made all decisions together and have put an effort into making realistic timelines as well as continuing to update and manage our timelines.
Major software issues	0.3	As we are using many "off-the-shelf" software components and frameworks, we must be ready to switch tooling if we cannot find a way to achieve our goals.
AI Model being incorrect	0.5	This is the highest risk in our project. We are not training our own model, so we need to find one that best works with Resume Creation. We must monitor the responses the AI is returning to the user.
Managing user information	0.4	We must do our best to follow the best software practices in dealing with sensitive user information.

3.6 Personnel Effort Requirements

Tasks	Effort (Hrs)
Set up a development environment for all members. *Make sure all developers can work without any assistance.*	10
Create detailed screen sketches for the front-end. *Understand how the UI will look allowing for UI components to be created faster.*	10
Create database schemas. *Understanding how we will store user accounts and files.*	20
Set up CI/CD for the website. *Allowing for any commits to be pushed through our pipelines and test.*	40
Create UI components in React. *Represent all our screen sketches in React.*	60
Implement back-end API for OpenAI API Calls. *Create the correct prompts to give the model given user input.*	35
Implement Resume templates, grading, and criteria. *Develop a fair and accurate grading of user Resumes compared to our top Resumes.*	70
Deploy to AWS. *Deploy to our EC2 instance and allow anyone to create an account and make a resume.*	50
Invite ECS (Engineering Career Services) to create a resume. *Receive and update resume grading and improvement from ECS.*	10

3.7 Other Resource Requirements

Our website is hosted on AWS, and besides the financial price of hosting, we will need to find resume templates and information on good resumes from multiple sources to develop the best resume grading scale we can.

4 Design

4.1 Design Content

Our design features an online website that can leverage the AI models from OpenAI (ChatGPT) to help users design and improve their resumes. Users should be able to see the different resume templates we have and use them to fill in their resume information. The website should generate a resume for them with their information that follows the selected template and display it to the user. The website will then provide a grade or score for the resume based on several criteria the team will decide on.

After generation, the website will send the resume to the AI model, instructing it to make suggestions for adjustments to improve the quality of the resume. Using these suggestions, the website will generate a new resume and score and present it to the user. Following this process, the user can save this resume to their gallery, allowing them to go back and look or adjust it later.

The user will have the additional ability to upload resumes and have them graded by the website. They can generate an improved version of the resume created using AI. Like before, the user can save these resumes to their gallery to visit them later.

Hardware Design: Our final product will only be a website, so no hardware components exist.

Software Design:

- Our software will be modular based, with many components being reused in different ways throughout the product.
- We will use an OpenAI AI model and train it to understand commands surrounding resume building.
- The design should be secure to ensure that user information is safe. This includes confidential information that may be included in their resume. We will have a user agreement statement at sign-up that warns them of any risks that they will partake in with our software.
- The system will be based on a website model, but we may include a mobile application in the future.

4.2 Design Complexity

This project is complex regarding the types and number of features it will contain and the APIs it will need to use. In addition to the complexity of designing and programming such a project, we will also need to implement various features that will only add to the complexity. ResumeUp will have many useful features, such as uploading a resume, scanning and parsing it, and using that information. That information will then be moved back and forth with an API allowing feedback exchange between the user and the AI. That feedback will then need to have an intuitive way for users to view and implement it if they choose. This sort of functionality has yet to be seen in similar tools, leading to various challenging tasks and learning opportunities for us. Users will also be able to download their resumes.

Much of this project will involve constant iteration of the various features to ensure they are of the highest quality and work as designed and intended. The iteration will also assist in ensuring that the client is satisfied with the tools and features of the project.

4.3 Modern Engineering Tools

Chat GPT was used to assist in idea generation and general tips for helping in the design process of the application. It can be a useful tool to help generate ideas and common design patterns using its vast collection of data and knowledge.

We also used Figma as a tool to create the design itself. Figma allowed us to create a proper layout of ResumeUp while also having interactivity. This gives us an understanding of how users might interact with ResumeUp and gives us a chance to see how the pages will flow together.

4.4 Design Context

Area	Description
Public health, safety, and welfare	There will be a minimal amount of influence on the public safety and welfare of users. Some potential areas of concern are data privacy, bias from the large language model, or accuracy of the results. User data could be hacked if stored. The results from the AI may not accurately reflect the user's intentions. On the other hand, it may further enhance the ideas users attempt to convey on their resumes.
Global, cultural, and social	The language for the current model will be English. The influence on the type of data generated will be due to the bias or otherwise from the selected AI model. The generation of data for the user will be in the English language. The data generated may be biased if the AI model is biased.
Environmental	This product will use electricity to run the servers or personal devices to use the tool. It may also further increase the electronic waste produced by those servers. There could be an increase in energy usage from nonrenewable sources and an increase in the usage/production of technology-related materials and assets.
Economic	The economic impact is very minimal to our team. There should be little to no cost to consumers. However, the potential benefit to end users may be great, as it could make the difference between a low-paying job and a high-paying job. The two main economic concerns are server hosting fees and AI usage token costs. Users could also benefit financially from a more lucrative job position.

4.5 Prior Work/Solutions

AI resume tools are a new category of online tools that are appearing on the internet. While they exist, they are often limited. Tools that advertise themselves as "AI resume" tend to only use AI to design and build the resume. They may allow users to enter an existing resume to scrape data from, or they may have them enter it themselves. After doing so, they can pick a template the AI will fill out using their information. While this can be helpful, they do not help the user create a better resume. A visually appealing resume does help to get that initial look, but the AI can also be harnessed to improve wording, designing, and more, which is where ResumeUp comes into play.

Currently, other AI resume tools allow users to:

- Upload a resume to scrape data from.
- Enter data manually.
- Select a resume template to fill out.

- Fill the resume with the appropriate data.
- Export the completed template.

ResumeUp will do all of the above and have other tools, such as getting feedback from AI. A list of pros and cons is as follows.

Pros:

- Contains all of the tools that existing resume builders have.
- Allows for direct feedback and communication to an AI.
- Visually see improvements that can be made, recommended by AI.

Cons:

- There are fewer data/templates than existing, popular resume builders.

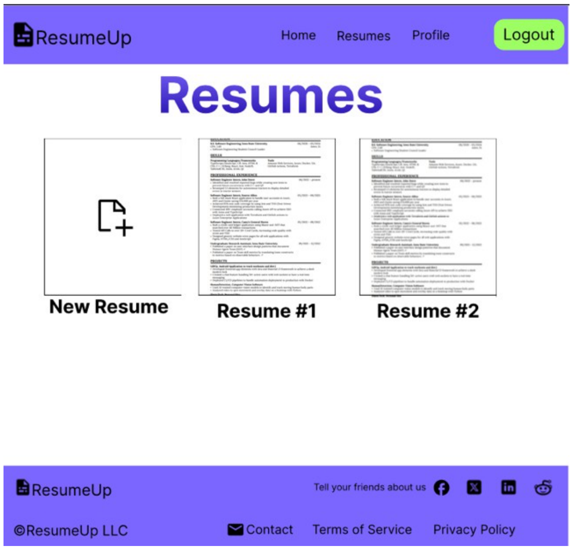
4.6 Design Decisions

- The website application will use an AI large language model to assist in creating and improving the resumes. We decided to go with this idea to take advantage of the new field of AI tools to easily generate feedback and other important information in ways that were impossible without AI. This will provide additional benefits besides the already available tools to edit resumes.
- The application will allow users to easily import and export resumes. This allows a quick and easy way to start using the tool, especially if the user has already spent considerable time designing their resume. It would be ideal for users who decide to use ResumeUp to have what they use to be easy and efficient.
- ResumeUp will allow users to view and implement feedback given by the AI. This choice was to give a step up above other existing tools on the market. It will also allow users to create more intuitive and improved resumes quickly and easily. These changes will ultimately improve their resumes, which could improve their odds of striking a job in their targeted field.

4.7 Proposed Design

Various designs have been created and discussed with our client and our advisor. The designs have been modified to appeal to the client and the advisor while meeting all the requirements. Ultimately, we decided to make a Figma of our final design. While this may change during development, we will base the design on this. The Figma can be found here: https://www.figma.com/file/qlyQgNrfv1xXVCwdkHnEFQ/ResumeUp?type=design&node-id=0-1&mode=design&t=dTpx54B4IfkqLvUj-0

Example Pages:



ResumeUp Home Resumes Profile Logout

Resumes

New Resume

Resume #1

Resume #2

ResumeUp

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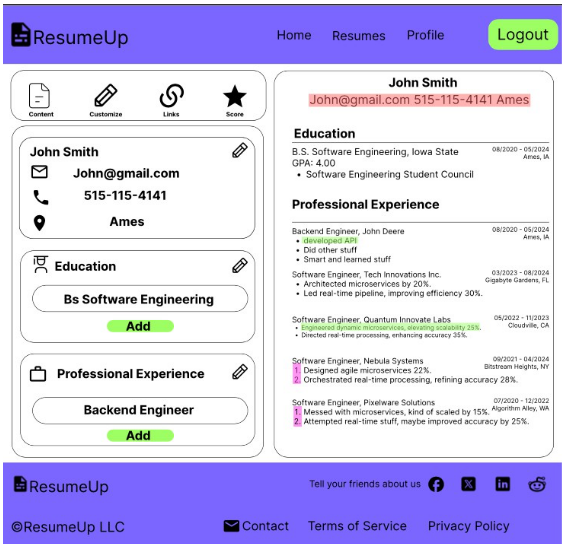

ResumeUp Home Resumes Profile Logout

Content Customize Links Score

John Smith

John@gmail.com

515-115-4141

Ames

Education

Bs Software Engineering

Add

Professional Experience

Backend Engineer

Add

John Smith

John@gmail.com 515-115-4141 Ames

Education

B.S. Software Engineering, Iowa State — 08/2020 - 05/2024, Ames, IA
GPA: 4.00
- Software Engineering Student Council

Professional Experience

Backend Engineer, John Deere — 08/2020 - 05/2024, Ames, IA
- developed API
- Did other stuff
- Smart and learned stuff

Software Engineer, Tech Innovations Inc. — 03/2023 - 08/2024, Gigabyte Gardens, FL
- Architected microservices by 20%.
- Led real-time pipeline, improving efficiency 30%.

Software Engineer, Quantum Innovate Labs — 05/2022 - 11/2023, Cloudville, CA
- Engineered dynamic microservices, elevating scalability 25%.
- Directed real-time processing, enhancing accuracy 35%.

Software Engineer, Nebula Systems — 09/2021 - 04/2024, Bitstream Heights, NY
1. Designed agile microservices 22%.
2. Orchestrated real-time processing, refining accuracy 28%.

Software Engineer, Pixelware Solutions — 07/2020 - 12/2022, Algorithm Alley, WA
1. Messed with microservices, kind of scaled by 15%.
2. Attempted real-time stuff, maybe improved accuracy by 25%.

ResumeUp

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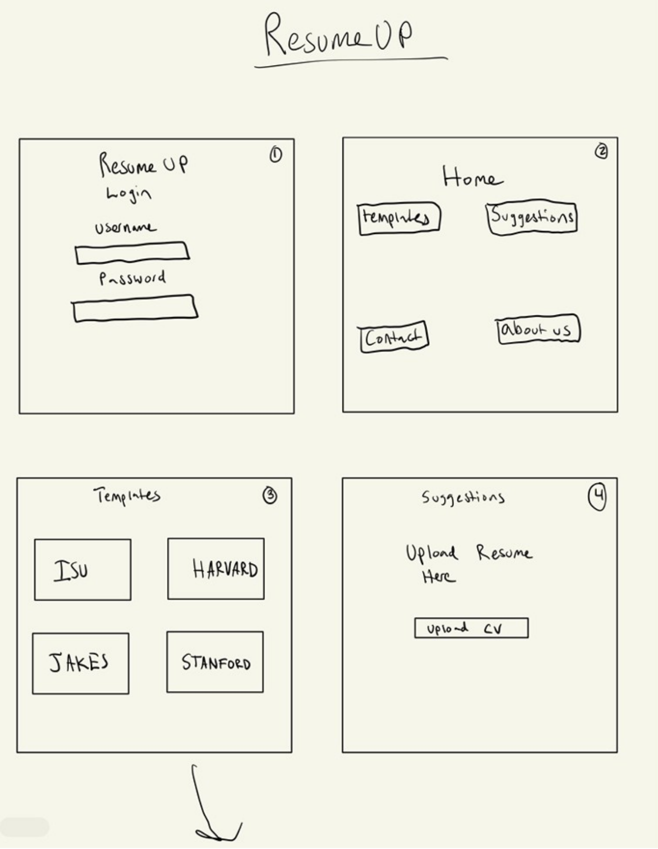
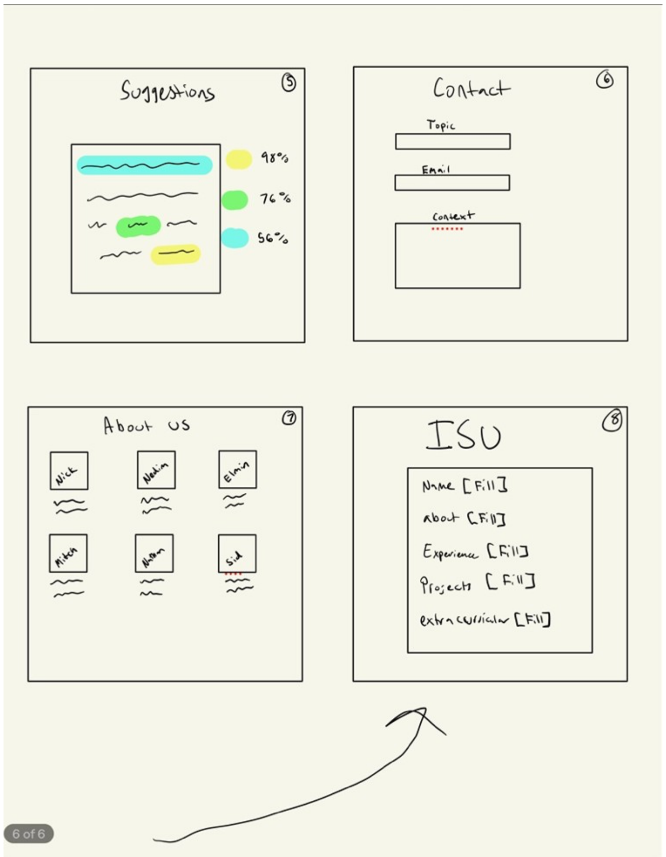
4.7.1 Design 0 (Initial Design)

Design Visual and Description



This figure displays a general layout of various screens of the application. Screen (1) is a login page. Screen (2) is a home page, allowing users to navigate easily. Screen (3) allows users to select from a list of resume templates. Screen (4) allows users to upload an existing resume they have created.



This figure displays four additional screens. Screen (5) shows suggestions on a resume, generated by AI. Screen (6) displays a contact screen to contact the developers. Screen (7) is an about page for the developers. Screen (8) contains additional information for resumes.

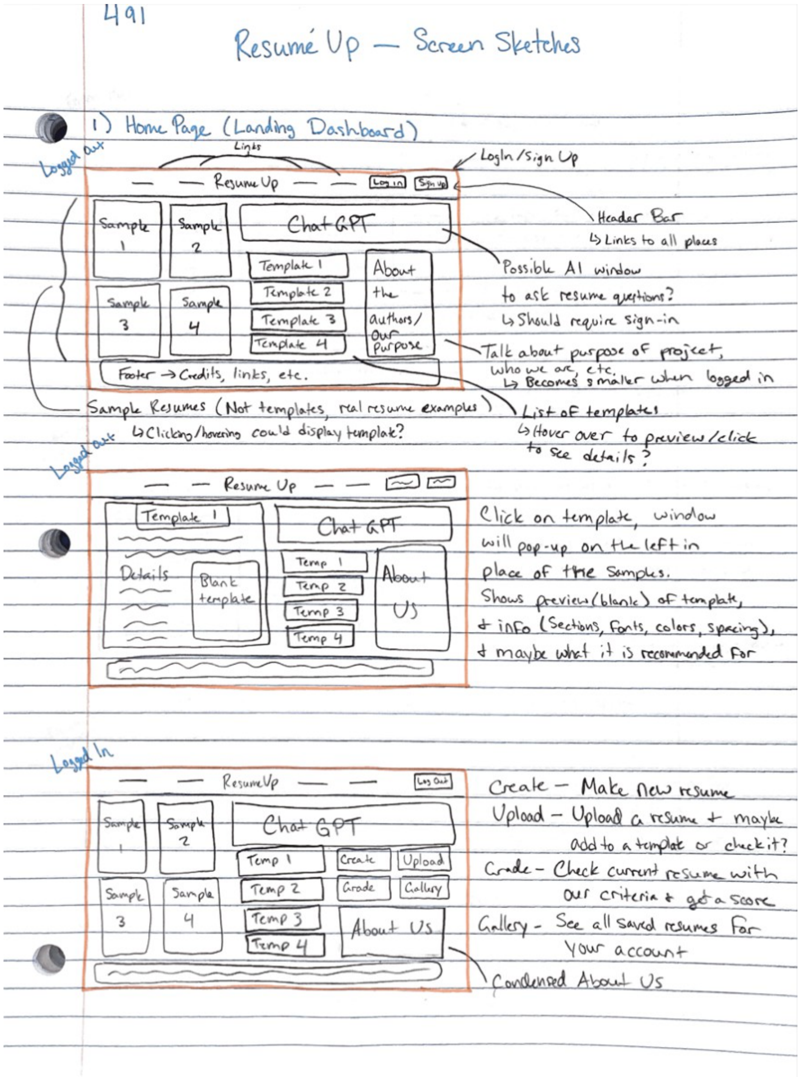
Functionality

The design will follow a general flow as detailed below for each user. A new user will enter the website and immediately see a landing page that displays some information about the site and a selection of action items. The actions include being able to import a resume as well as create a new one based on the information they enter. They may then select a new resume template to use with their information. After their information has been entered, they will be shown a screen where an AI will assist by using feedback to generate new and alternative writings for their resume. After the user has seen the feedback, they may download their resume for job applications. The current design should be sufficient for all stated functional and non-functional requirements.

4.7.2 Design 1 (Design Iteration)

We have spent some time working on a more refined version of the screen sketches from Design 0. These sketches were made to provide more detail on the site's look and what things will be included. Many of the pages were changed in this design, and we used it as a basis for our proposed Figma. The Figma is what we will use when programming the website.

Design Visual and Description



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Resumé Up — Screen Sketches

1) Home Page (Landing Dashboard)

Logged out

Links

LogIn/Sign Up

Header Bar
↳ Links to all places

Possible AI window to ask resume questions?
↳ Should require sign-in

Talk about purpose of project, who we are, etc.
↳ Becomes smaller when logged in

Sample Resumes (Not templates, real resume examples)
↳ Clicking/hovering could display template?

List of templates
↳ Hover over to preview/click to see details?

Logged out

Click on template, window will pop-up on the left in place of the Samples. Shows preview (blank) of template, + info (Sections, Fonts, colors, spacing), + maybe what it is recommended for

Logged In

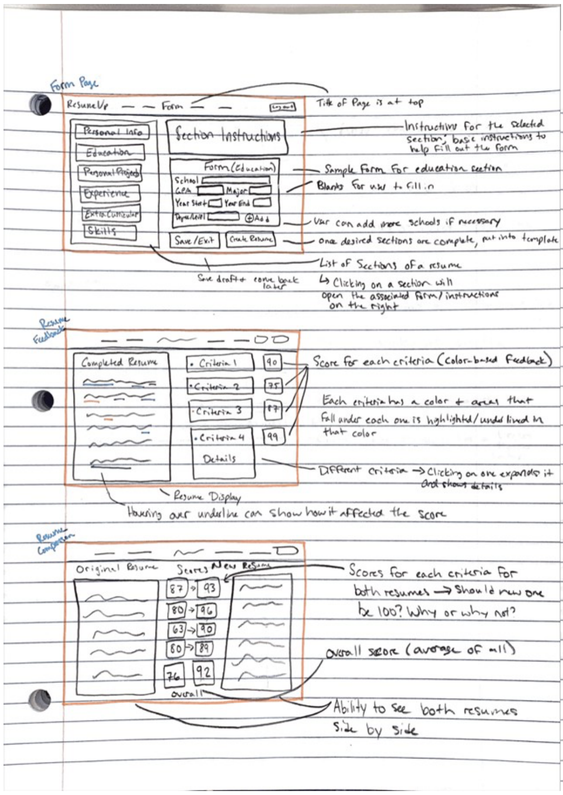
Create – Make new resume

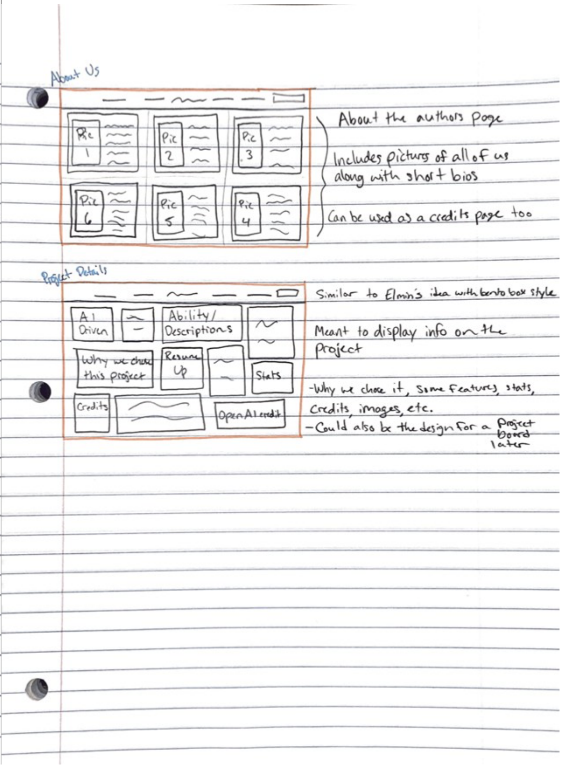
Upload – Upload a resume + maybe add to a template or check it?

Grade – Check current resume with our criteria + get a score

Gallery – See all saved resumes for your account

Condensed About Us


Form Page
ResumeUp
Form
Log out
Personal Info
Education
Personal Projects
Experience
Extra Curricular
Skills
Section Instructions
Form (Education)
School
GPA
Major
Year Start
Year End
Degree/Level
⊕Add
Save/Exit
Create Resume
Title of Page is at top
Instructions for the selected section; basic instructions to help fill out the form
Sample Form for education section
Blanks for user to fill in
User can add more schools if necessary
Once desired sections are complete, put into template
List of Sections of a resume
↳ Clicking on a section will open the associated form/instructions on the right
Save draft + come back later
Resume Feedback
Completed Resume
• Criteria 1
90
• Criteria 2
75
• Criteria 3
87
• Criteria 4
99
Details
Score for each criteria (Color-based Feedback)
Each criteria has a color + areas that fall under each one is highlighted/underlined in that color
Different criteria → Clicking on one expands it and shows details
Resume Display
Hovering over underline can show how it affected the score
Resume Comparison
Original Resume
Scores
New Resume
87 → 93
80 → 96
63 → 90
80 → 89
76
92
overall
Scores for each criteria for both resumes → Should new one be 100? Why or why not?
Overall score (average of all)
Ability to see both resumes side by side


About Us
Pic 1
Pic 2
Pic 3
Pic 6
Pic 5
Pic 4
About the authors page
Includes pictures of all of us along with short bios
Can be used as a credits page too
Project Details
AI Driven
Ability/Descriptions
Why we chose this project
Resume Up
Stats
Credits
OpenAI credit
Similar to Elmin's idea with bento box style
Meant to display info on the project
-Why we chose it, some features, stats, credits, images, etc.
-Could also be the design for a project board later

Pretty much every page was changed in this iteration. The home page is more detailed with different views for being logged in or out. Templates are now shown on the homepage to give users an easier way to view them. Created a new page for filling out information when making a new resume. We also adjusted the suggestions, including resume scoring and what part of the resume was changed due to AI. This was done with the hope of meeting our requirement of having a modern UI that is also extremely intuitive and provides all the functionality needed.

4.8 Technology Considerations

For the development of ResumeUp, we have decided to go with the following Technologies:

- **TypeScript:** We will be using TypeScript as our main programming language. TypeScript allows us to use our past JavaScript knowledge but also provides us with helpful features like static typing. This is also a new technology we want to learn, and ResumeUp will provide us with the opportunity.
- **React:** For the front-end, we will be using React.js. React is something that most of us have used, so we are comfortable using it. The component-based structure of React also makes it so we only need to code something once if it is reused often. While React has a lot of documentation, there is a chance that one of the component libraries we use has little documentation. This is something we will need to look out for when creating ResumeUp.
- **Node:** For the back-end, we will be using Node.js. Node is another technology we have experience with, so it makes sense to use it for our back-end. Node also has a lot of community support and documentation, making it easy to find solutions to any problems we come across. One negative about Node is that it is single-threaded, which can result in slow processing. Node also relies on callbacks, and too many nested callbacks are something we will need to look out for when developing ResumeUp.
- **DynamoDB:** For our database, we will be using Amazon's DynamoDB. DynamoDB is a

NoSQL database with built-in security, continuous backups, and more. It is scalable and highly available, making it ideal for a project like ResumeUp. This technology is new to us, so we will need to do some learning, but we are excited for a chance to learn this. Another tradeoff of using DynamoDB is the cost associated with it. The pricing can be complex, so we must properly plan everything before diving in.

- **AWS:** To host ResumeUp, we will be using AWS. This is a technology that some of us have experience with or want to gain experience with. It is cloud-based, so we will not need a physical server, and highly scalable. AWS is also highly reliable, with data centers all around the world. Like DynamoDB, we must keep the cost in mind when hosting the site. Another tradeoff is that managing and configuring can get quite complex, so this is something we will need to learn.

4.9 Design Analysis

Our final design works well and shows off the general idea of ResumeUp well. Using a Figma lets us have a more interactable design making it easier to understand exactly what click takes you where and gives us more perspective on how users might use ResumeUp. While we may describe the Figma as our "final" design, there can never truly be a final design for something like this. During development, changes to functionality, ideas, or looks will always come up and impact the final look of ResumeUp.

5 Testing

5.1 Unit Testing

All Units should be tested. We are doing test-driven development, which should ensure that we will have test coverage for all of our methods and functions. We will be using Jest for our unit tests.

5.2 Interface Testing

Our Interface testing will be done with selenium allowing us to mock the clicks and inputs of a user to accurately test the interface.

5.3 Integration Testing

Our integration paths for our program will be connecting with an external API and our database and connecting our back-end and front-end code. We will test these like unit tests, expecting results from both systems' responses.

5.4 System Testing

We will test from start to finish creating an account to exporting a completed resume. We will use our unit and interface tests to achieve this.

5.5 Regression Testing

By using test-driven development, we will have tests for all methods or functions in our code so we can run these tests before a commit can happen to our main branch.

5.6 Acceptance Testing

Since we are our own client, we will review our own guidelines and project charter to see if we meet the requirements that we have set for ourselves.

5.7 Security Testing

For security testing, our main focus will be data confidentiality test cases to ensure passwords are securely encrypted. Along with this, our other focus will be on authorization and authentication test cases. These will include unauthorized users not being allowed to access data/ log into accounts without being secure.

5.8 Results

The results of our testing will give us somewhat full proof of potential errors and issues that could've arisen in our code. We would hope for bug and error identification. Another result could be code coverage, as our group aims to aim for 80% code coverage. This goal does feel realistic after looking at the industry standard, according to Atlassian. Another thing we can identify is security vulnerabilities, which can be important when it comes to storing user information. Overall, we want as few issues as possible regarding releasing this site. We will update this as we go, but these are initial goals pre testing.

6 Implementation

Our plan to implement the milestones listed in section 3.3:

1. Set up development environment for all members (Week 1):
   - Ensure all team members have the proper technologies installed and ready to use.
   - Utilize the provided Gitlab for version control.
     - A main branch, along with a branch dedicated to each team member.
2. Create detailed screen sketches for the front-end (Week 1):
   - Finalize all design ideas for each screen of ResumeUp.
   - Make adjustments to the design as needed.
3. Create database schemas (Week 2):
   - Finalize all tables and fields needed for ResumeUp to function.
   - Being implementing DynamoDB with these tables and fields.
4. Set up CI/CD for ResumeUP (Weeks 3-4):
   - Create CI/CD pipelines for ResumeUP in the group Gitlab.
5. Create UI components in React (Week 4):
   - Begin development of various front-end portions of ResumeUp, like user login.
   - Ensure responsiveness along with a good-looking UI.
6. Implement back-end API for OpenAI API calls (Week 5):
   - Implement APIs to be utilized by the front-end that handles the OpenAI calling.
   - Ensure data is used correctly with the proper responses given by the API.
7. Implement Resume grading and criteria (Week 6):
   - Develop and finalize a grading method for resumes created with ResumeUp.
   - Implement the grading method into the actual ResumeUp functionality.
8. Deploy to AWS (Weeks 7-8):
   - Set up AWS to host ResumeUp.
   - Deploy the front-end and back-end to AWS.
9. Invite ECS (Engineering Career Services) to create a resume (Week 10):
   - Coordinate with ECS to create a resume using ResumeUp.

7 Professionalism

This discussion is with respect to the paper titled "Contextualizing Professionalism in Capstone Projects Using the IDEALS Professional Responsibility Assessment", *International Journal of Engineering Education* Vol. 28, No. 2, pp. 416–424, 2012

7.1 Areas of Responsibility

Additional Column to Table 1:

Area of Responsibility	**SE Code of Ethics Principle 3: Product**
Work Competence	Ensure that the products Software Engineers make are of the highest quality and that final products meet the project's goals in a timely manner. Ensure that Software Engineers follow professional standards and fully understand the software they work on.
Financial Responsibility	Ensure that realistic cost estimates are made for the project and that the product is priced reasonably for the time and effort put into it.
Communication Honesty	Ensure that the parts of a product are well documented and that there is extensive documentation on anything that happened or the team may have come across during development.
Health, Safety, Well-Being	Ensure the products developed are high quality with minimal risk of danger. Ensure that any ethical, economic, cultural, and legal issues are identified and well documented.
Property Ownership	Ensure that user data is used and collected ethically and properly authorized. Also ensure that users data is maintained properly and any sensitive data cannot be leaked.
Sustainability	Software Engineers should actively try and avoid economic damage when developing products, and any environmental issues that arrise during development are identified and well documented.
Social Responsibility	Ensure that products are of the highest quality and that they are extensively tested to allow maximum benefit for its users. Ensure that software specifications are well documented and satisfy the user's requirements for the project.

Differences between the SE Code of Ethics and NSPE:

- **Work Competence:** While these are both very similar, Principle 3 also adds the addition of producing products of the highest quality while meeting all the goals on time. This is something the NSPE version does not mention. One thing missing from Principle 3's version is avoiding deceptive acts.

- **Financial Responsibility:** The NSPE version talks more about how to treat employers, employees, clients, etc, financially, while Principle 3 talks more about developing proper cost estimates for a product.
- **Communication Honesty:** NSPE is more concerned with public statements, while Principle 3 is more concerned with product documentation.
- **Health, Safety, Well-Being:** This principle was similar across NSPE and Principle 3. One difference is that Principle 3 continues the discussion of ensuring products produced are high quality, helping avoid risks.
- **Property Ownership:** NSPE is more concerned with employers and employees, while Principle 3 focuses more on user's ownership over their data and ensuring it is used properly.
- **Sustainability:** NSPE does not mention anything about sustainability, while Principle 3 ensures that Software Engineers document any environmental issues they come across.
- **Social Responsibility:** The NSPE version discusses being honorable, responsible, and ethical to uphold the honor of the profession, while Principle 3 is more concerned with having a responsibility to satisfy the public by, again, producing high-quality products.

7.2 Project Specific Professional Responsibility Areas

Which apply to ResumeUP and how well are we performing in each:

- **Work Competence:** This does apply to ResumeUp. It is important that our final product is of the highest quality and that each of us understands what we are working with. We are somewhere between Medium and High for this area. We are committed to making a great product, and while we are knowledgeable about a lot of the stuff we are using, there is still more we can learn.
- **Financial Responsibility:** This does not apply to ResumeUp. While we need to consider things like paying for hosting or a database, it is not the most important thing on our list of things to do. Profiting off of ResumeUp is not something we have discussed as much, so our performance could be considered Low or have no ranking at all.
- **Communication Honesty:** This does apply to ResumeUp. We must be open and honest with our users about how ResumeUp will use their data and what data will be used. Our performance in this area is Medium. We have plans to ensure our users know everything they need to know about ResumeUp, but there are still more discussions that need to be made on how to do this.
- **Health, Safety, Well-Being:** This does not apply to ResumeUp. Since this is a website, there is almost no risk to a user's health and safety. An argument could be made that the resume they produce can hurt their well-being, but that is ultimately up to the user. Since this almost does not apply to ResumeUp, there is no way we can rank our performance on this, so it is N/A.
- **Property Ownership:** This does apply to ResumeUp. Since we are dealing with user's data, we need to ensure that it is collected and used ethically and only when needed. Our ranking for this would be High as we have had discussions on what information we would need from users and are actively trying to get as little sensitive information as possible so the user can be the sole owner of their data.

- **Sustainability:** This does not apply to ResumeUp. Since this is a website, there is a low risk of environmental damage. While software does impact the environment, it is not as much as creating something like a car or plane. Our ranking for this is low as it is again something we have not discussed much, but there is not much need for discussion in this context.
- **Social Responsibility:** This does apply to ResumeUp. The goal of ResumeUp is to help improve society and make people's lives easier, so this area is important for us. Our ranking for this is high as we are all proud of this product and strive to make sure it is as strong as possible so it can help make resume-building easier for everyone.

7.3 Most Applicable Professional Responsibility Area

The most applicable professional responsibility area for ResumeUp is Work Competence. We need to ensure that our product is of the highest quality and everything works as it should. This means we must implement many things important to software, like testing and good documentation, and ensure we understand everything going into this application.

8 Closing Material

8.1 Discussion

For this project stage, we have mainly focused on preparations for developing ResumeUp. This includes researching possible technologies to use, learning about resumes and finding commonalities between them, and creating "experiments" where we develop a small portion of some functionality to understand how we should implement it in the actual ResumeUp site. These experiments consisted of things like front-end design experiments and OpenAi API experiments and helped us learn how these crucial technologies work in general and in the context of ResumeUp.

8.2 Conclusion

As stated above, most of our work so far has been preparation. This prep work has taken many forms, from developing actual code to doing more conceptual research. We had some goals in this project stage, focusing on understanding our requirements and how to achieve them. Some of those requirements are specific ones relating to functionality, like parsing a resume correctly and using AI to enhance a resume, and others are more non-functional, like designing a website that looks good. Our plan to achieve these was the experiments and research mentioned earlier. While we did a good job gathering information on fulfilling these requirements, some things held us back. The main one is time. While working on research and experiments, we also had to complete this design document to work on along with other classes. This can be overwhelming if a good time management plan is not implemented. In the future, we could be less ambitious and focus on requirements piece by piece. This can help us achieve our goal of knowledge faster by using previous requirements knowledge when learning about another one.

8.3 References

[1] "Contextualizing Professionalism in Capstone Projects Using the IDEALS Professional Responsibility Assessment", International Journal of Engineering Education Vol. 28, No. 2, pp. 416–424, 2012.

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[4] S. Pittet, "What is code coverage?," Atlassian, https://www.atlassian.com/continuous-delivery/software-testing/code-coverage#:~:text=With%20that%20being%20said%20it,good%20goal%20to%20aim%20for. (accessed Dec. 3, 2023).

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8.4 Appendices

8.4.1 Team Contract

Team Members:

1) Nick Thomas 2) Elmin Didic
3) Nedim Hodzic 4) Mitchell Taylat
5) Nathan Boldt 6) Siddharthan Prakash

Team Procedures:

1. Day, time, and location (face-to-face or virtual) for regular team meetings: **face-to-face (virtual sometimes)**
2. Preferred method of communication updates, reminders, issues, and scheduling (e.g., e-mail, phone, app, face-to-face): **Discord**
3. Decision-making policy (e.g., consensus, majority vote): **Majority vote 5/6**
4. Procedures for record keeping (i.e., who will keep meeting minutes, how will minutes be shared/archived): **Swap weekly for who records and share in a doc**

Participation Expectations:

1. Expected individual attendance, punctuality, and participation at all team meetings: **Every team member must attend meetings and give input unless an external issue arises**
2. Expected level of responsibility for fulfilling team assignments, timelines, and deadlines: **The team will split responsibility equally and give opportunities to all members to contribute in a different way**
3. Expected level of communication with other team members: **Team members must respond within 24 hours of a ping unless an external issue arises. Preferably within the day the question is asked.**
4. Expected level of commitment to team decisions and tasks: **Each team member will give equal input on decisions and come to a majority decision on discussions and tasks.**

Leadership:

1. Leadership roles for each team member (e.g., team organization, client interaction, individual component design, testing, etc.):
   - **Elmin:** Team Lead
   - **Nedim:** Back-end Lead
   - **Mitchell:** Project Organization
   - **Nathan:** Individual Component Design
   - **Siddharthan:** Documentation Lead
   - **Nick:** Client and Advisor Interaction
2. Strategies for supporting and guiding the work of all team members: **Daily check-ins with roadblocks/updates on every member. If an issue arises, we, as a group or someone with the knowledge, will help resolve it.**
3. Strategies for recognizing the contributions of all team members: **Weekly scrum meetings, we will have a board for what went well, what we can do better, and standouts of the week (who went above and beyond)**

Collaboration and Inclusion:

1. Describe the skills, expertise, and unique perspectives each team member brings to the team:
   - **Elmin:** He has worked with many technologies, including (Java, C#, JavaScript/TypeScript, C/C++, Python, GOlang, and SQL). Also worked with Dev tools such as (Git, Docker, AWS, Azure, Lint, and Prettier)
   - **Nedim:** Has worked with many technologies emphasizing full-stack development. These technologies include Java and SpringBoot, JavaScript, Node.js, React.js, Express.js, MongoDB, and SQL. Has experience developing and calling APIs and developing front-end UIs.
   - **Mitchell:** Has worked with many technologies in a professional and personal environment, such as Python, Java, C, C++, C#, SQL (MySQL and PostgreSQL), Javascript, Typescript, and various front-end tools. Very adaptable and can learn quickly.
   - **Nathan:** Has worked with many technologies related to front-end development, including Java, Javascript, C, Node JS, and Typescript. Workforce experience in consulting relating to software development, SAP, and data analytics.
   - **Siddharthan:** Has worked with full-stack technologies such as Java, Springboot, Python, Flask, Javascript/Typescript, Node.js, React.js, and SQL. Also have experience with Git, Docker, AWS DynamoDB, and Postman.
   - **Nick:** He worked as a back-end developer over the summer at Walmart, working with NodeJs and GraphQL, bringing knowledge of databases and APIs.
2. Strategies for encouraging and support contributions and ideas from all team members: **We will keep in close communication and form bonds outside of work. We plan to have social events together to have a tighter connection. This will allow free-flowing ideas from all members, and we will consider them and discuss them as a group.**
3. Procedures for identifying and resolving collaboration or inclusion issues (e.g., how will a team member inform the team that the team environment is obstructing their opportunity or ability to contribute?) **If an issue arises with collaboration, we will find the issue**

and resolve it by moving people around or talking it out as a group. If there is an inclusion issue, we will bring it up with our advisor on how to handle the situation.

Goal-Setting, Planning, and Execution:

1. Team goals for this semester: **Create and export a resume (functional product doesn't need to have complete UI finished)**
2. Strategies for planning and assigning individual and team work: **Weekly scrum meeting discussing tasks that need to be completed for the week. Every member will attend and understand their goals**
3. Strategies for keeping on task: **Daily updates on what everyone is working on and any roadblocks they have**

Consequences for Not Adhering to Team Contract:

1. How will you handle infractions of any of the obligations of this team contract? **We will meet as a group and not exclude anyone to discuss a breach of contract and determine the course of action**
2. What will your team do if the infractions continue? **We will bring it up with our advisor and seek action from there (After three or more offenses)**

****

a) *I participated in formulating the standards, roles, and procedures as stated in this contract.*
b) *I understand that I am obligated to abide by these terms and conditions.*
c) *I understand that if I do not abide by these terms and conditions, I will suffer the consequences as stated in this contract.*
1) Nick Thomas____________________________________DATE 9/6/23___________
2) Mitchell Talyat_________________________________DATE 9/6/23___________
3) Elmin Didic_____________________________________DATE 9/6/23___________
4) Siddharthan Prakash______________________________DATE 9/6/23___________
5) Nedim Hodzic___________________________________ DATE 9/6/23___________
6) Nathan Boldt____________________________________ DATE 9/6/23___________