Milestone 1

- Project name: DeepScan (resume scanner)
- Group members: Aidan Chapman, Bryce Lucas, Andrae Taylor, Kole Micakaj, and Michael Lafata
- Project Description: Our project is a web-based chatbot application focused on resume enhancement, designed to help users improve their resumes through an intuitive and conversational AI experience. By integrating DeepSeek, an open-source large language model, we provide cost-effective, intelligent feedback without relying on paid services like ChatGPT. Users can upload their resumes and input a target job title, which the chatbot uses to tailor its suggestions—offering improvements in tone, relevance, and structure based on industry-specific expectations.

  This application runs entirely in a web environment, prioritizing accessibility and simplicity. Core features include resume upload and parsing, AI-driven feedback contextualized by the user's desired job role, and an interactive interface for real-time engagement. The project balances practicality and innovation, ensuring that the resume advice is not only grammatically sound but also aligned with the norms and keywords of the user’s target field, making their resumes more competitive and market-ready.

- Technologies to be used: DeepSeek, Python, Java(website) and others…

Research

Paper 1

- Title: Developing an Intelligent Resume Screening Tool With AI-Driven Analysis and Recommendation Features
- Link: https://onlinelibrary.wiley.com/doi/pdfdirect/10.1002/ail2.116
- Summary: Summary: This paper is about the development of a resume screening tool for both interviewers and interviewees, helping the former to quickly screen out applicants that don't meet the standards of the organization, and the latter to develop better resumes. This second function is the purpose of our own project. The paper reviews relevant and similar technologies, such as text mining and applicant tracking systems. The resume analyzer scans resumes and can convert the relevant data to CSV format for other data processing purposes. According to the results and discussion section, one of the areas that the project falls short in is error handling. The suggested areas of improvement are gamification to encourage users to successfully enhance their resume, and a mobile version of the application. It seems that this application would have to be hosted on a server along with the database and webserver. Our project could be able to rely only on a web server, making it easier to deploy while relying on the power of the Deepseek AI.

Paper 2

- Title: Resume Ranker: AI-Based Skill Analysis And Skill Matching System

- Link: https://ieeexplore-ieee-org.huaryu.kl.oakland.edu/stamp/stamp.jsp?tp=&arnumber=10756304
- Summary: This paper discusses a method of using AI tools to analyze and rank resumes by how well they fit to a particular job type. They use their own sorting and categorization algorithms to do this. It works through a website, where applicants can submit their resumes, and recruiters can use AI to collect the information from them, process them, and rank them.
- Paper 3 title: *Conversational AI and Chatbots: Enhancing User Experience on Websites*
- https://sciencepublishinggroup.com/article/10.11648/j.ajcst.20240703.11?utm_source=chatgpt.com
- The article *"Conversational AI and Chatbots: Enhancing User Experience on Websites"* by Manoj Kumar Dobbala and Mani Shankar Srinivas Lingolu takes a closer look at how chatbots and conversational AI can make websites better for users. It talks about key benefits like offering 24/7 help, making things easier to navigate, and giving users a more personalized experience. It also points out some challenges, like how hard it can be to handle unclear questions, keeping user data safe, and making sure the chatbot keeps improving over time. The authors suggest using stronger NLP tools, good API management, and user feedback to help solve these issues. They also bring up ethical concerns like data privacy and AI bias.

Toward the end, the paper explores where chatbot tech might be heading like using multiple types of input (text, voice, etc.), understanding context better, working with IoT devices, and even developing emotional intelligence. All of this is aimed at making websites more engaging and helpful for users.

Paper 4

- Title: Using AI to Implement Effective Teaching Strategies in Classrooms: Five Strategies, Including Prompts
- Link: https://papers.ssrn.com/sol3/papers.cfm?abstract_id=4391243
- Summary: This article is a discussion of the ways that AI such as ChatGTP can help educators effectively and efficiently teach their students, with help from LLMs to produce varied examples and explanations, tests, to assess student learning, and to help students to distribute the practice of important ideas. Altogether, AI can be used to help provide learning material and help monitor students and their progress.

Paper 5

- Title: DeepSeek-R1: Incentivizing Reasoning Capability in LLMs via Reincforcement Learning
- Link: https://arxiv.org/abs/2501.12948
- Summary: This article goes over the weights and overall model design of deepseek-R1 and goes over the core issues that were addressed by its creators from their previous models. The core issues with the original deepseek was poor readability on user inputs and its ability to mix languages. These issues were

addressed with multi-stage training and cold start data before reinforcement learning. This training method allowed deepseek's team to reach the same level as openai "O" series of ai models in math, code, and stem related benchmarks but achieving a lower score when using non english inputs. The main issue that deepseek still lags behind openai with is non english support. This research is important for the resume builder as it shows that although deepseek is comparable to openai we will need to keep in mind its support for non english speakers and resumes typed in different languages. Focusing and testing our model with different languages could separate our project compared to others using deep seek knowing this shortcoming.

Summary of Research:

Much of the research we found concerned AI and its ability to assist in improving performance and working with resumes. We also found that DeepSeek has some issues working with different languages, and that certain applications might require special modification to work with projects that heavily involve other languages. Our project, DeepScan, narrows the focus of AI assisted improvement to specifically working with resumes, helping candidates to modify and enhance their resume to stand out and perform better compared to a normal resume, when reviewed either by a person or by resume scanners. DeepScan will be unique in that it will outsource much of the workload to DeepSeek, to rely on its superior power and effectiveness. DeepScan also primarily focuses on the candidate rather than the recruiter, the primary purpose of DeepScan is to help job seekers create a resume that will perform best against AI resume scanners. DeepScan will also make sure to handle and compensate for any

issues caused by DeepSeeks unfamiliarity with other languages. Our research overall encompasses a variety of topics related to ai and its ability to scan documents and improve them as well as an understanding of the model we will use in order to better utilize it.

Potential Gap in the Literature:

Most of the literature we reviewed focuses on how AI and chatbots can assist with user experience, automate customer service, or help recruiters manage resumes. However, there is a noticeable gap when it comes to AI tools specifically designed for job seekers especially tools that help users tailor their resumes to perform well against AI-powered resume scanners (ATS systems). Additionally, very few papers discuss how open-source models like DeepSeek can be customized and used in this space, especially with language-specific limitations.

Potential Innovation:

Our project, DeepScan, fills this gap by offering a candidate-focused resume enhancement tool that uses DeepSeek to provide tailored feedback based on a user's target job title. Unlike generic resume checkers or recruiter tools, DeepScan aims to optimize resumes specifically for AI screening systems. It also includes custom handling for multilingual issues, which are often overlooked in similar tools. This makes DeepScan a practical, low-cost, and more inclusive solution and an innovative step beyond what the existing research currently covers.