

Corporate Adoption of Artificial Intelligence (AI) technology

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ABSTRACT

A major government contractor made the decision to integrate artificial intelligence within many of its operations. During my internship with them, I was involved in a project that aimed to harness AI's potential for enhancing efficiency and security, which involved creating an in-house generative AI system customized to serve as an internal knowledge base for employees. This project is a ChatGPT-like system hosted on the cloud and is knowledgeable about internal company operations. The overarching goal for this AI system is to serve as an extensive information repository, adept at addressing company-related inquiries, data analytics, policy details, procedural guidelines, and more. Although the system appears to work very well, it was only released recently and has no feedback to date. The team and I are actively working on not only maintaining the project but also implementing new features such as document uploads and code execution.

1. INTRODUCTION

AI is taking over the world. Rapid advancements in AI technology have allowed services such as ChatGPT to perform tasks such as writing, programming, and conversing faster, more easily, and sometimes even more effectively than humans. This innovation, brought about by companies such as OpenAI, Google, Microsoft, and more, is pushing us into a time where AI is not merely a curious

oddity, but an all-encompassing feature of our reality. With each breakthrough, AI becomes more accessible, more potent, and more integral to our daily lives.

As AI technologies evolve at an exponential pace, businesses find themselves at a crossroads. The allure of cost reduction and increased revenue is sending companies worldwide into a scramble to integrate AI into their operations. In the realm of hiring and recruitment, according to Regina (2023), 24% of companies have adopted AI in talent recruitment processes and 56% of companies, in the same study, stated in 2020 that they would utilize AI for hiring within a year. Additionally, between 2018 and 2022, these algorithms' usage increased by 270%, with over 98% of companies on the Fortune 500 using them (Tilmes, 2022).

2. RELATED WORKS

Champion and Pagani (2024) discussed how utilizing artificial intelligence can foster organizational creativity inside a company. They postulate that AI can help foster creativity inside a company by "suggesting new directions, inspiring new ideas, and even creating new products." Additionally, they say that AI can help simplify complex tasks through automation and "use natural language processing chatbots, intelligent agents, and machine learning to engage customers and

employees,” which my project is primarily focused on.

According to Appio, et. al. (2024), Robotic Process Automation, or RPA, “is software that automates tasks previously executed by humans. The software allows, via a script... a digital robot [to] access websites and system applications to read, extract or fill in data.” They also argue that AI enabled significant advances in RPA that have allowed it to expand its capabilities, another focus of my project.

According to Becerra-Fernandez (2024), AI is an effective medium to facilitate knowledge management (KM) processes. KM is a discipline that “promotes the creation, sharing, and leveraging of [a] corporation’s knowledge.” She argues that chatbots such as OpenAI’s ChatGPT can support KM processes. Because ChatGPT can mimic human intelligence in conversation and has an astronomically large knowledge base, both individuals and businesses can leverage it to make decisions and carry out tasks and thus, “enhance our capacity to know.” My project exists precisely because the government contractor wished to facilitate a more comprehensive KM system using AI.

3. PROJECT DESIGN

This section will review the system’s high-level workings, stakeholder requirements, and key features.

3.1. Review of System Architecture

The development of this application was a many months-long process by a sizeable team, including me. At first, the backend of the web application was written in a Javascript web application framework called Angular; however, due to some dependency issues, it was rewritten in the C# web application framework Dotnet. The landing page was created in Flask, a Python web framework,

with UI elements written in ReactJS, a Javascript UI framework. The AI computing itself is handled by Microsoft Azure’s OpenAI Service. Since Microsoft owns OpenAI the creators of ChatGPT, Microsoft Azure, Microsoft’s cloud platform, comes with generative AI functionality provided by OpenAI that is easy to implement into projects. The database is, again, provided by Azure in the form of Azure CosmosDB. Finally, Azure Monitor covers the governance, security, and maintenance of the app. All of these technologies come together to create a relatively simple, single-page web application that facilitates conversation with OpenAI’s GPT-4 model with some special features.

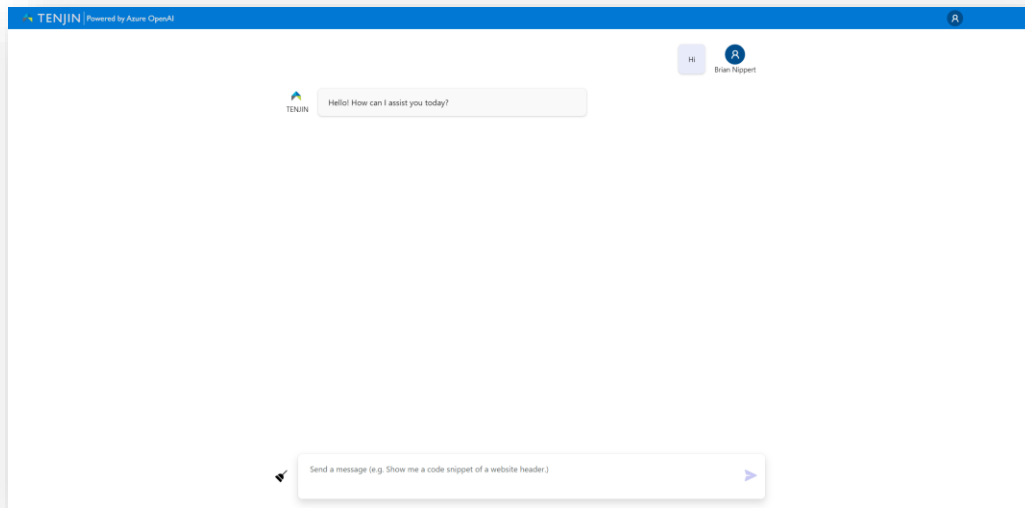
3.2. Requirements

It’s important to note that this project was created from the ashes of another previously cancelled project. This previous project was an employee-only Google Chrome extension that allowed for monitoring of employee use of the various generative AI models already available at the time. It was created to prevent any proprietary or otherwise classified information from being exposed. When it was mostly finished and shown to the higher-ups, they suggested our team take over the work of another software team that was already working on the inklings of what would become our current project. Because the web application was internal, no monitoring would need to occur and the need for other generative AI models would disappear. This would make our Chrome extension functionally extinct, however.

Thus, control of that project would be handed over to our team. Our base requirements were to create a web application similar to ChatGPT that would provide employees with company-specific information that would be more helpful than a standard generative AI model. For example, it would be able to reference specific company information such as IT

helplines and paystub time tracking deadlines when assisting employees. Give these time-saving features would indubitably save costs and manpower in the future.

These features come together to form an application that, as mentioned before, is an employee-restricted generative AI model using OpenAI's GPT-4 model that is



3.3. Key Features

The main project has been mostly completed. The current, broad features:

- Require a full employee authentication process consistent with all other company websites.
- Mimic ChatGPT's functionality. This means the web application will save conversations by user, have the previously mentioned logins, recall things that it or the user had mentioned in any previous conversations, and so on. This would all be achieved by utilizing OpenAI's GPT-4 model.
- Give the model access to all company proprietary information to enable it to assist employees with said company-specific information.
- Provide regular maintenance and governance in the form of updates, monitoring, and policy.

knowledgeable of all relevant company information. This includes all proprietary information about the company itself, including assistance phone numbers, company data, basic IT help, and so on. Additionally, it includes any relevant information about government contractors in general, such as information on contracts, rules, regulations, policies, general deadlines, and so on.

4. ANTICIPATED RESULTS

As the project has only recently shipped, I do not expect results for a few months. However, our project was designed to save manpower and time in various areas. Ideally, results would show up as reduced IT support workloads, including tickets, call times, and issues; less confusion on company policies, leading to fewer questions and violations. Last, there could be less confusion on ongoing projects within the company, leading to shorter acclimation times and improved productivity.

Truthfully, a myriad of results could emerge as this project continues. There is a reason

companies are scrambling to adopt any form of AI they can into either their products or their productions. No doubt more benefits will emerge from this relatively simple concept in terms of productivity and efficiency for individual employees and the company.

5. CONCLUSION

This project has great potential within the company. It will simplify workflows and save time and manpower. It is also significant that it stands as the company's first dive into utilizing AI for everyday company processes. The fact that it is tailored for employees by having access to company-specific information and utilizes OpenAI's most advanced language model sets it apart from weaker publicly available tools. Hopefully, the company will continue to see the value of projects like these and sponsor their creation in the future.

The project is also very valuable to me as a software developer. It was my first experience working with other engineers in the industry and my first time working with the tools to build such software. Although my studies contributed to my performance in this project, I learned many things no academic setting could teach me by working with my team.

6. FUTURE WORK

While the main team worked on major elements of the project, a large aspect of overall development I worked on was developing Proof-of-Concept code for planned or proposed features, including:

- Document uploading to allow the model to read, reference from, and answer questions about specific documents in the context of the company.
- The generative AI model itself as an application into Microsoft Teams so that multiple coworkers could collaboratively

ask questions to the same agent in the same conversation.

- Functionality enabling the agent to execute code uploaded from a file and perform resulting actions such as debugging, refactoring, and so on.

As the project is very recently shipped, these planned features are merely concepts or small batches of code. As more important projects are delivered first, more priority will be assigned to these features later.

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