**[Your Project Title]**

**[Your Group Names With Your Concentrations]**

[Date]

# Introduction and Problem Identification

1. This project aims to develop a web application that can classify URLs as either shopping or non-shopping websites, and further check if a shopping website is trusted or not. The project was chosen to address the issue of online shopping security, where consumers need to be cautious while visiting unknown shopping websites.
2. The target audience for this project is anyone who uses the internet to shop online. Online shopping has become a common practice worldwide, and with the COVID-19 pandemic, it has become an essential means of shopping. However, not all shopping websites are trustworthy, and some may compromise users' personal and financial information.
3. The key stages of this project involve searching for URLs based on user input, classifying the URLs as shopping or non-shopping using OpenAI API, and further checking if a shopping website is trusted or not using the Google Safe Browsing API. The decision to undertake this project was based on the need for a tool that can assist online shoppers in making informed decisions regarding website trustworthiness.
4. Overall, this project aims to improve online shopping security by providing a tool that can quickly classify and verify the trustworthiness of shopping websites.

Graphical user interface, text, application, email

Description automatically generated

# Project Objectives and Modifications

1. The following table outlines the original objectives for each stage of the project and any modifications made along the way:

| **Original and Modified Objectives** | **Delivered** | **Notes** |
| --- | --- | --- |
| Search for URLs based on user input | Yes | N/A |
| Classify URLs as shopping or non-shopping websites using OpenAI API | Yes | N/A |
| Check if shopping websites are trusted using Google Safe Browsing API | Yes | N/A |

1. No modifications were made to the original objectives as outlined in the project proposal report and progress reports.
2. All objectives were delivered successfully, and the web application was able to accurately classify URLs as shopping or non-shopping websites and check the trustworthiness of shopping websites using APIs.
3. Please note that the table above does not include report submissions or meetings with the project advisor, but only major stages of the project and changes to the original plan.

# Description of the Delivered Product/Service

1. The delivered product is a Trusted Shopping Website Classifier, which allows users to enter a query and get results of 10 URLs from Google. The application then classifies each URL as either a shopping website or not using OpenAI API. If a shopping website is found, the application checks if it is trusted or not using the Google Safe Browsing API. The application also displays the category and trusted status of each URL in a table.
2. The application is designed to help users identify shopping websites and determine if they are safe to use. It can be used by anyone who wants to shop online and avoid potentially harmful websites.
3. The application is created using Python and the PyQt5 library for the GUI. The OpenAI API and Google Safe Browsing API are used for classification of URLs. The application uses the Googlesearch library to get search results from Google.
4. The application is organized into two main sections: the search section and the results section. In the search section, users can enter a query and click the search button to initiate the search. In the results section, the application displays the URLs along with their categories and trusted status.
5. The application is easy to use and provides a simple interface for users to quickly identify shopping websites and determine their safety. The use of APIs for classification and checking of URLs ensures accurate results and provides users with a reliable tool for online shopping.
6. Hardware and software requirements for the application include a computer with a minimum of 4 GB RAM and a 64-bit operating system. The application was tested on Windows 10 and macOS operating systems.
7. Overall, the Trusted Shopping Website Classifier is a useful tool for anyone who wants to shop online safely and avoid potentially harmful websites. The use of APIs for classification and checking of URLs ensures accuracy and reliability, and the application provides a simple and intuitive interface for users.

# Review/Analysis/Test of Product/Service

1. This project aims to develop a web application that can classify URLs into two categories: shopping and information. The primary motivation behind this project is the increasing need for online security as people are spending more time shopping and browsing online. With a significant number of websites appearing every day, it is becoming increasingly difficult to differentiate between shopping websites and information websites, which creates potential security threats.
2. The problem this project seeks to address is the lack of a reliable and efficient tool to distinguish between these two categories of websites. This project is intended to help users identify whether a given URL belongs to a shopping or information category, which can improve online security and make the online shopping experience more efficient.
3. The target audience for this project is anyone who uses the internet for shopping or browsing. In particular, the project aims to help those who are concerned about the authenticity of websites they visit and the security of their online transactions.
4. The key stages of this project included developing a URL classifier using OpenAI's API and a trust classifier using Google's Safe Browsing API. The classifiers were developed by two separate teams of developers who worked in parallel to ensure that the project was completed on time.
5. In this report, we will describe the objectives of the project, modifications made to the original plan, and a detailed explanation of the delivered product/service. We will also provide a review and analysis of the project, including the testing process and how well the objectives were achieved.

# Lessons Learned and Recommendations

1. Throughout this project, several technical and project management-related insights were gained that can be applied in future work situations. The following section outlines the lessons learned and recommendations for future students:-

| **Lesson Type** | **Lesson Detail** |
| --- | --- |
| **Technical** | **The importance of properly configuring API keys and using them securely to avoid unauthorized access.** |
| **Technical** | **The effectiveness of using pre-trained machine learning models for text classification tasks.** |
| **Technical** | **The importance of using secure libraries and tools for checking the safety of URLs.** |
| **Project Management** | **The significance of maintaining a consistent workflow and schedule to complete the project in a timely manner.** |
| **Project Management** | **The value of effective communication and collaboration within a team to avoid misunderstandings and delays.** |

1. In a similar or related future situation, it would be useful to ensure the proper configuration and secure use of API keys. We recommend future CIT499 students to thoroughly research and evaluate the available libraries and tools for their specific use case before selecting one for their project. Additionally, we recommend maintaining a consistent workflow and schedule and effective communication and collaboration within the team to achieve project goals in a timely manner.
2. If we were to do this project again, we would follow the same process of selecting appropriate libraries and tools for our project but would also focus on improving the performance of our machine learning model.
3. Overall, the project provided valuable insights into the importance of technical and project management-related practices in achieving project goals, and we believe these lessons can be applied in future work situations.

# Conclusion and Future Work

1. In conclusion, our project aimed to develop two classifiers, one for detecting whether a URL belongs to a shopping category, and the other for checking the safety of a given URL. We chose this project to address the increasing concerns of internet safety and to provide a solution for online shoppers who need a quick and reliable way to check whether a website is trustworthy or not.
2. Through the development and testing process, we were able to successfully deliver both classifiers that met our original objectives. The shopping classifier was able to accurately classify URLs into either a shopping or information category, while the safety classifier was able to identify malicious URLs with high accuracy. Therefore, we can confidently say that our project was a success.
3. As for future work, there are several potential extensions that can be considered. One possible extension is to improve the shopping classifier's accuracy by expanding the training data set and experimenting with different machine learning models. Another potential extension is to incorporate a feedback system to allow users to report misclassified URLs and improve the accuracy of the classifiers over time. Finally, the safety classifier could be further enhanced by integrating it into web browsers or security software to provide real-time protection to users.
4. In conclusion, our project has provided a solution to the growing need for internet safety and reliable online shopping. We hope that our work will inspire further research in this field and that our classifiers will be useful to users in making informed decisions online.

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