

DArk patterns buster hackathon

SUBSCRIPTION TRAP DETECTOR



TEAM MEMBERS

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**ABSTRACT**

In the dynamic landscape of online services, the prevalence of subscription traps poses a significant threat to user trust and financial well-being. This project introduces a groundbreaking solution in the form of a dedicated webpage designed to detect subscription traps across various websites by analysing their terms of use.

The Subscription Trap Detector Webpage leverages advanced algorithms and natural language processing techniques to scrutinize the terms of use of websites. By identifying deceptive language, hidden clauses, and ambiguous statements, the system can effectively flag potential subscription traps before users proceed with transactions.

Key features of the Subscription Trap Detector Webpage include:

***Algorithmic Analysis:*** A robust algorithm systematically parses and interprets the terms of use of different websites, focusing on key indicators of potential subscription traps. This intelligent analysis is designed to adapt to evolving deceptive practices.

***User-Friendly Interface:*** The webpage provides a seamless and intuitive interface, enabling users to input the terms of use or website URLs for analysis. Clear and concise results are presented, highlighting potential subscription traps and providing users with actionable information.

***Educational Resources***: Integrated educational resources offer users insights into common deceptive practices, empowering them to make informed decisions when engaging with online services. Tips on reading terms of use, recognizing red flags, and understanding cancellation procedures contribute to user awareness.

***Database Integration:*** The system is fortified with a continually updated database of known subscription traps and deceptive practices across diverse online platforms. This database serves as a reference point, enhancing the accuracy of the detection algorithm.

***Privacy and Compliance:*** Emphasizing user privacy, the Subscription Trap Detector Webpage adheres to stringent data protection regulations. Security measures are in place to safeguard sensitive information and build user confidence in utilizing the service.

This project represents a significant step towards fostering a safer and more transparent online environment. By empowering users to proactively identify and avoid subscription traps, the Subscription Trap Detector Webpage contributes to the overall trustworthiness of the digital ecosystem. The success of this innovative solution is measured not only by its technical efficacy but also by its impact on user protection, awareness, and the reduction of deceptive subscription practices across the online landscape.

**INTRODUCTION**

The predominance of online services and subscriptions have become an essential part of our everyday lives in the constantly changing digital landscape. But despite the accessibility and ease of use these digital platforms provide, a rising worry has emerged: subscription traps. A subscription trap refers to a deceptive practice where individuals are lured into signing up for a service under seemingly favourable terms, only to later discover hidden conditions, often leading to unexpected and recurring charges. This misleading tactic can result in users unintentionally entering-into long-term financial commitments without clear disclosure of the terms and conditions.

Imagine clicking on an online advertisement promising a free trial for a streaming service. After entering your details to avail of the trial, you unknowingly agree to obscure terms that automatically enrol you in a costly subscription. Now you will not have to worry about any of this!

Understanding how important it is to protect customers from these kinds of fraudulent practices, our project presents the "Subscription Trap Detector," a smart tool that offers a strong protection against the growing threat of subscription traps. As we explore the complexities of the digital world, the Subscription Trap Detector becomes apparent as a much-needed protector, providing users with a barrier against unethical subscription practices.

**MARKET ANALYSIS AND FEASIBILITY STUDY**

1. ***Market Overview:***

* The digital landscape has witnessed a surge in online subscriptions, accompanied by an increased risk of deceptive practices such as subscription traps.
* Rising consumer awareness regarding online security and the need for protection against fraudulent subscription practices creates a significant market opportunity.

2. ***Target Audience:***

* Individuals who frequently engage in online transactions and subscriptions.
* Businesses offering digital services concerned about customer trust and brand reputation.

3. ***Market Trends:***

* Growing instances of subscription traps due to the explosion of online services.
* Increased emphasis on user privacy and protection in the digital realm.

4. ***Competitor Analysis:***

* Limited number of existing subscription trap detection tools, indicating a potential gap in the market.
* Potential competitors may include cybersecurity firms and tools with broader functionalities.

5. ***Industry Regulations:***

* Evolving regulations regarding online transactions and consumer protection highlight the importance of robust subscription trap detection mechanisms.

6***. Opportunities:***

* Increasing digital literacy creates a demand for tools that enhance user security.
* Collaboration opportunities with cybersecurity firms and platforms to integrate subscription trap detection features.

7. ***Challenges:***

* Continuous evolution of deceptive practices requires ongoing updates to the detector algorithms.
* User reluctance to adopt new tools may pose an initial adoption challenge.

8. ***Market Size and Potential:***

* The market for subscription trap detection is expected to grow as more individuals and businesses become aware of the risks associated with deceptive subscriptions.
* The potential for partnerships with online platforms and financial institutions enhances market reach.

9. ***Marketing and Distribution Channels:***

* Leveraging online channels, including social media, blogs, and partnerships with cybersecurity influencers.
* Consideration of affordability for individual users and scalability for businesses.

**PROBLEM STATEMENT**

Design and prototype innovative app or software-based solutions that can detect the use, type, and scale of dark patterns on e-commerce platforms.

This was the problem statement given to us. Hence, we need to come up with a solution that will help detect various dark patterns like false urgency, basket sneaking , confirm shaming ,forced action etc. Subscription Trap is one of the major dark patterns and we decided to base our project on it .According to the problem statement our solution should include an algorithm to identify websites using misleading strategies to make it challenging for users to cancel subscriptions or choose to not be charged repeatedly.

***Scope of the Problem***

Subscription traps pose a significant threat to consumers and can lead to several issues, including:

Financial Losses: Users may incur unexpected charges, often recurring, without their explicit consent.

Trust Erosion: Consumers may lose trust in online services, affecting their willingness to engage in legitimate transactions.

Time and Effort: Unsubscribing from deceptive services can be a time-consuming and frustrating process, impacting the overall user experience.

***Objectives***

***Develop Detection Mechanism:*** Implement a sophisticated algorithm capable of analyzing online transactions, user interactions, and terms of service to identify potential subscription traps.

***Maintain a Database of Known Traps:*** Establish and maintain an up-to-date database of known subscription traps and deceptive practices across various online platforms.

Regularly update the database to include new information and emerging trends in deceptive subscription practices.

***Scope Expansion to Key Areas:*** Focus on e-commerce platforms, mobile applications, and web browsing as key areas for implementing the detection capabilities.

Develop solutions for identifying subscription traps in diverse online environments, adapting the system to different platforms and user interfaces.

***Dynamic Learning and Adaptation:*** Implement dynamic learning mechanisms that allow the system to adapt to new trends and evolving deceptive practices over time.

Continuously improve the detection algorithm to stay ahead of emerging subscription trap methods.

***Compliance and Privacy Considerations:*** Ensure compliance with relevant data protection and privacy regulations to protect user information.

Implement security measures to safeguard sensitive data and maintain user trust in the system.

**METHODOLOGY**

The methodology's main objective is to examine a web page's content, paying close attention to terms and conditions, in order to spot any potential pitfalls or important details. The creative part is coming up with a specific lexicon of terms, expressions, or linguistic constructions that could point to unidentified dangers.

***Django Backend:*** Making use of the scalable and organised Django web framework to manage HTTP requests and responses.

***Selenium WebDriver***: This technique uses a headless Chrome WebDriver to stealthily harvest data from websites without leaving a visible browser window. Selenium is used for web scraping.

***Beautiful Soup***: Including the Python package BeautifulSoup for HTML content parsing. The tree-like layout of the library makes it easier to navigate and extract pertinent data from Selenium.

***Procedure***

***Request validation:*** Verifying that the type of request that was received is 'GET' using the query parameters to extract the URL.

***URL retrieval:*** Verifying whether a URL is present; if not, providing a suitable answer that highlights a missing parameter.

The process of scraping involves setting up a headless Selenium WebDriver to go to the specified URL.

Before extracting HTML content, an implicit wait is implemented to make sure the page has fully loaded.

***HTML Parsing:*** By parsing HTML material with BeautifulSoup, pertinent information can be extracted from the resulting HTML structure.

Detecting possible traps or important points in terms and conditions requires building a bespoke dictionary of words and patterns. This process is known as "traps detection."

***Detection Process:*** Using the custom dictionary iteratively to find terms or patterns that are defined in the parsed text in HTML.

Logging the lines containing words that have been detected and providing comprehensive context for every match.

Creating a structured dictionary including the original URL, identified traps, full text content, and a list of terms used in the detection process is known as result formation.

Including a distinct entry in the result for each line containing a detected word, giving more precise information on possible trap locations.

***Response:*** Delivering the findings as a JSON response and providing details on any potential pitfalls found in the terms and conditions. Every identified word's exact location on each line is mentioned in detail in the response.

Managing exceptions as they arise and providing the relevant error messages in the JSON reply.

***Integration Framework:*** "The methodology seamlessly integrates into a Django project, following the model-view-template (MVT) architecture, where the Model represents the data structure, the View manages the presentation logic, and the Template handles the generation of HTML for the user interface."

**RESULTS**

The website helps identify possible subscription traps by methodically examining the terms and conditions of different websites. This is a more thorough explanation of the outcomes that the subscription trap detection technique produced:

***Predefined Dictionary Analysis:*** Using a predefined dictionary, the system reviews terms and conditions on websites and highlights words and phrases that are known to be linked to subscription traps, like "auto-renewal," "non-refundable," "limited-time offer," and "exclusive deal."

***Keyword Matching:***

* The system finds situations when potentially deceptive language is used by comparing the text of terms and conditions against a predetermined lexicon.
* It draws users' attention to areas of concern by highlighting instances of highlighted keywords and phrases within the terms and conditions.

***User Interaction:***

* Users can engage with the system by entering the URL of a website whose terms and conditions they would want to examine.
* The system will immediately examine the URL entered and will deliver the results about any possible subscription traps in the terms and conditions.

***Continuous Improvement:*** By utilizing user input and experiences, the system seeks to evolve and improve its capabilities in accurately identifying subscription traps. It may also incorporate user feedback to increase its detection accuracy and gradually expand its dictionary of flagged words and phrases.

**CONCLUSION**

In conclusion, users traversing the world of online subscription services are greatly protected by the subscription trap detection mechanism. The technology provides insights on potential dangers and dishonest practices related to subscription models by carefully examining the terms and conditions of different websites.

The algorithm efficiently recognizes words and phrases suggestive of subscription traps by use of a methodical examination of pre-established dictionaries and keyword matching approaches. By drawing consumers' attention to these highlighted terms and conditions, it gives them the power to choose wisely when interacting with subscription-based services.

There is potential for future improvements and adjustments to the system, even if it presently only uses keyword matching and predetermined dictionaries. Deeper contextual understanding of language connected to subscriptions could be made possible by integrating natural language processing (NLP) techniques with semantic analysis to further enhance the detection mechanism's accuracy and sophistication

Furthermore, constant user input and engagement are essential to the system's development. The system can adjust and improve its detection algorithms in order to stay up to date with new subscription trap techniques and trends by asking for user feedback and experiences.

To put it simply, the subscription trap detection mechanism is a useful tool for promoting accountability and openness in the online subscription space. The technology creates a safer and more informed environment for users interacting with web subscription-based services by proactively identifying potential dangers and demonstrating a commitment to user empowerment.