



उपभोक्ता मामले विभाग
DEPARTMENT OF
CONSUMER AFFAIRS



Dark Patterns Buster
Hackathon 2023



Dark Patterns Buster Hackathon (DPBH-2023)

Round 3 Grand Finale @ IIT(BHU), Varanasi

(Feb.17, 2024)



Coimbatore Institute
of Technology

ML SENTINEL SQUAD

T Bala Saatvik
K Hariharan
T Kavim
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R Koushic

Browser Extension

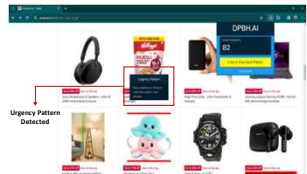


Mobile Application

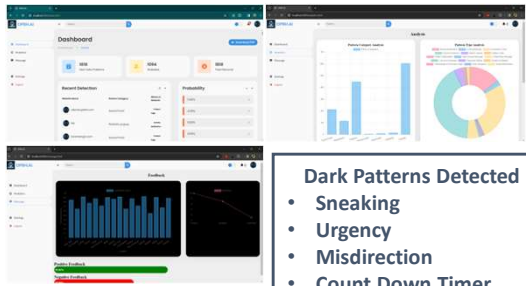
Browser Extension UI



Dark Patterns



Dashboard



Technology Stack



Dark Pattern Importance Hierarchy

Sneaking

Urgency

Misdirection

Count Down Timer

Privacy Terms Flagging

Scarcity

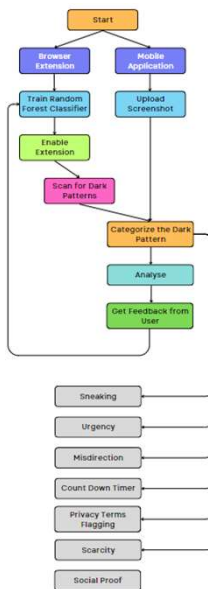
Social Proof

- Dark Patterns Detected**
- Sneaking
 - Urgency
 - Misdirection
 - Count Down Timer
 - Privacy Terms Flagging
 - Scarcity
 - Social Proof

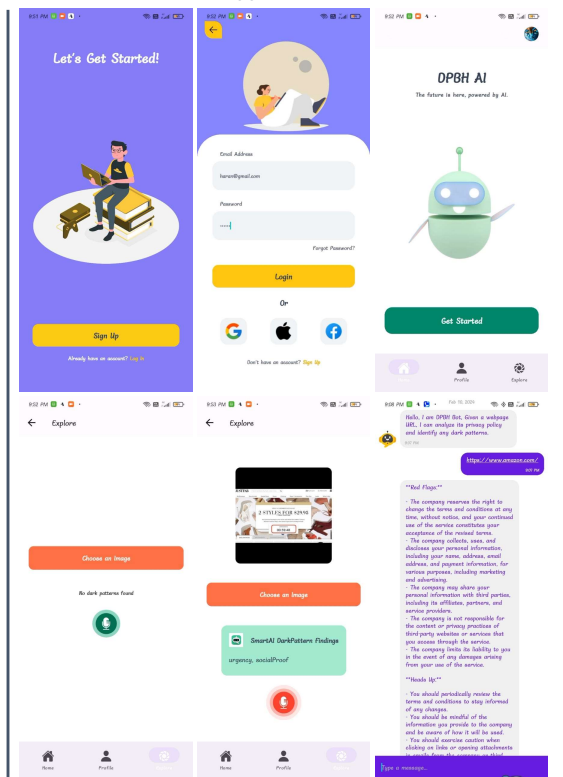
Features

- Detecting and Categorising Dark Patterns
- Blurring Dark Patterns
- Analysing the History of Dark Patterns
- Receiving Feedback from Users
- Retraining the model and Improving the Accuracy
- Gemini API to analyse Screenshots
- NLP Voice Enabled Bot
- Privacy Policy Analysis

Workflow



Mobile App UI with Chatbot



Browser Compatibility



OS Compatibility



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Abstract

Introducing our comprehensive solution: a cutting-edge project designed to combat dark patterns, those deceptive user interface designs that manipulate users into taking actions they might not otherwise choose. Leveraging the power of machine learning and user-friendly interfaces, our project offers multi-faceted detection and reporting capabilities. At its core lies an advanced algorithm based on the random forest model, meticulously trained to identify various dark patterns prevalent across websites. Our system pinpoints patterns such as scarcity, misdirection, and urgency, illuminating these deceptive practices with pinpoint accuracy. But we didn't stop there. We've crafted an intuitive dashboard, providing insightful statistics and visualizations of detected dark patterns within webpages. This standalone file offers a comprehensive overview, empowering users with actionable insights into the prevalence and impact of dark patterns.

Moreover, accessibility is key. With our React Native app, users can effortlessly identify dark patterns on-the-go. Simply upload a screenshot, and our Gemini-Pro-powered algorithm goes to work, highlighting any detected deceptive elements with precision. For those seeking real-time analysis and guidance, our voice-enabled chatbot steps in. Seamlessly integrated with natural language processing capabilities, users can simply provide a website URL, and our chatbot fetches the entire page, pinpointing dark patterns and suggesting actionable steps to mitigate their influence. In a digital landscape increasingly plagued by deceptive design practices, our project stands as a beacon of transparency and empowerment, equipping users with the tools and knowledge needed to navigate the web with confidence.

Team Members



T Bala Saatvik

Backend Developer



R Koushic

UI UX Developer



T Kavin

Mobile App Developer



S Kaviyarasu

Dashboard Designer



K Hariharan

Deployment Manager

Impact Assessment & Conclusion

Our browser extension, mobile app, and NLP bot empower users to identify and combat deceptive e-commerce practices. With precise detection of dark patterns, our tools enhance awareness and support informed decision-making. By fostering ethical design and accountability, our solution promotes transparency and trust between consumers and businesses, leading to a fairer online shopping experience.

Solution Highlights

Our project introduces a browser extension and a React Native app, providing users with effective tools to combat dark patterns. With the browser extension, our solution empowers users to identify and avoid deceptive design practices seamlessly, while the React Native app offers on-the-go detection, allowing users to upload screenshots for precise identification of dark patterns.