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"Fostering a Culture of Innovation and Entrepreneurial Excellence"



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23 January 2025
PTDI, UiTM Cawangan Johor
Kampus Pasir Gudang

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Electrical Engineering Studies, College of Engineering
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Kampus Pasir Gudang
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A-ST023: ALERTIFY: RECEIPT FRAUD DETECTION APPLICATION

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ABSTRACT

The Alertify App is an innovative fraud detection system designed to tackle the growing problem of financial fraud, particularly in digital transactions and receipt management. With 5-7% of organizational expenses often lost to fraudulent activities, the need for effective solutions is more urgent than ever. The app helps identify and prevent common types of fraud, such as duplicate claims, altered receipts, and inflated expenses, which can lead to significant financial losses for both businesses and individuals. The development of Alertify followed a clear, step-by-step process, starting with in-depth research to understand the challenges users face when detecting fraud. The app integrates advanced technologies like Optical Character Recognition (OCR) for extracting text, machine learning for recognizing patterns, and fuzzy matching to spot discrepancies in receipt details. These tools allow for real-time fraud detection, making the process faster and more accurate. User feedback was crucial in shaping the app's features, with many highlighting the importance of real-time fraud alerts, secure data protection, and ease of use. In fact, 57.1% of users considered fraud alerts to be the most important feature, while 28.6% focused on the security of their profile data. Designed to be intuitive, Alertify can be used by a wide range of users, from frequent shoppers to small businesses and finance professionals. However, the app is not without its challenges. Issues such as OCR inaccuracies, the need for large datasets to train machine learning models, and potential scalability concerns as transaction volumes grow need to be addressed. To ensure its success, the team plans to test the app with real users and refine it based on their feedback. Ultimately, Alertify App offers a promising solution to help users protect themselves from the growing threat of digital financial fraud.

Keywords: Alertify application, fraud detection, OCR, receipt, duplicate

1. Product Description

Alertify App is a state-of-the-art fraud detection system to combat the growing menace of financial fraud, notably in the areas of digital transactions and receipt management. Approximately 5-7% of organizational expenses are said to be channeled towards fraudulent activities, and now is the most urgent call to actions. The app aims to address common fraudulent practices that include duplicate claims, tampered receipts, and inflated expenses, which lead to huge losses for companies and individuals alike. Advanced technologies are

integrated into the app, including OCR which is used to scan and verify receipts and other documents. AI-powered OCR can quickly identify any discrepancies or signs of tampering. Meanwhile, machine learning algorithms can analyze large datasets to identify patterns and predict fraudulent activities. Supervised learning models are trained on labelled data to improve their accuracy in detecting fraud. Fuzzy matching techniques help in matching and verifying data

that may not be an exact match but is close enough to be considered a potential match. This is useful in detecting slight variations in fraudulent receipts. This allows for real- time fraud detection, enhancing the accuracy and efficiency of identifying fraudulent activities.

2. Diagrams

Figure 1 illustrates the steps to detect the receipt in Alertify application:

1. Login to the application via email or Google or Apple or Facebook.
2. Click “Add Receipt” to upload the receipt
3. Choose between upload files or videos or images
4. Click “Submit”
5. Wait until the uploading process is completed.
6. View the results.

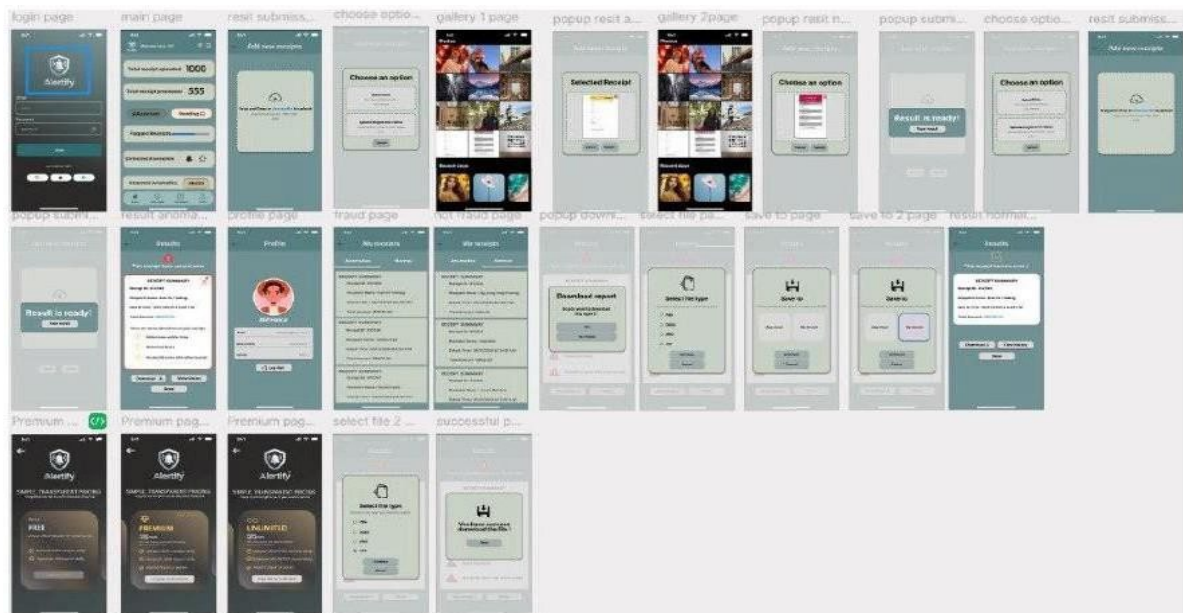


Figure 1. Interface of Prototype

3. Novelty and uniqueness

Many organizations still struggle to accurately identify fraudulent claims due to the ever-evolving tactics employed by fraudsters. As a result, there is an urgent need for more effective and automated fraud detection solutions that can identify anomalies, detect duplicate receipts, and flag altered documents in real-time. The Alertify App brings a fresh perspective to the fight against financial fraud, particularly in the digital age where online

transactions are becoming the norm. By using cutting-edge technologies like Optical Character Recognition (OCR) and machine learning, users can simply scan their receipts and let the app do the heavy lifting. Alertify is not just for tech enthusiasts; it's accessible for anyone, from busy shoppers to small business owners. The app's intuitive interface makes it easy to navigate, ensuring that users can quickly identify duplicate receipts or suspicious charges without any hassle. Moreover, Alertify places a strong emphasis on data security, giving users peace of mind that their personal information is safe while they manage their finances. Alertify not only addresses the critical issue of fraud but also fosters trust and confidence among its users, making it a reliable companion in today's increasingly digital world.

4. Benefit to mankind

Alertify equips users with the tools necessary to protect their financial interests effortlessly. Through the provision of immediate notifications and real-time fraud detection, the application enables users to identify potential threats before they escalate into significant financial losses, thereby enhancing their sense of security. Its user-centric design ensures accessibility for a diverse audience, ranging from busy consumers to small business proprietors, allowing them to safeguard their finances with minimal effort. Furthermore, Alertify promotes a culture of vigilance and accountability in financial transactions, empowering users to remain informed about their financial activities. Ultimately, Alertify not only enhances the feasibility of financial security but also fosters a safer and more reliable environment for all, enabling users to engage in the digital marketplace with assurance.

5. Innovation and Entrepreneurial Impact

The Alertify App represents a significant innovation in the realm of fraud detection, particularly by harnessing advanced technologies like Optical Character Recognition (OCR) and machine learning. This innovative approach allows users to effortlessly scan receipts and receive instant alerts about potential fraud, transforming a traditionally cumbersome process into a seamless experience. The entrepreneurial impact of Alertify is profound, as it not only addresses a pressing need in the market—combating financial fraud—but also empowers individuals and small businesses to take control of their financial security. By providing a user-friendly tool that simplifies fraud detection, Alertify opens up new avenues for entrepreneurs to build trust with their customers and enhance their operational efficiency. This app not only fosters a safer digital transaction environment but also encourages a culture of accountability and transparency in financial dealings, ultimately contributing to a more secure and trustworthy marketplace.

6. Potential commercialization

The potential commercialization of the Alertify App is promising, given the growing concerns surrounding financial fraud in an increasingly digital world. With e-commerce fraud losses projected to reach billions, businesses and consumers alike are seeking effective solutions to protect their financial transactions. Alertify can tap into this demand by offering

subscription-based models for businesses that require advanced fraud detection capabilities, as well as a freemium version for individual users. This dual approach not only broadens its market reach but also allows for scalability as user needs evolve. Additionally, partnerships with financial institutions and e-commerce platforms could enhance its visibility and credibility, creating a robust ecosystem for fraud prevention. By continuously updating its features based on user feedback and emerging fraud trends, Alertify can position itself as a leader in the market, ultimately driving revenue while making a meaningful impact on financial security for users everywhere.

7. Acknowledgment

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