**SYNOPSIS**

**Report on**

# EXPENSE SHARING APP

**by**

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# ABSTRACT

In our fast-paced world, efficient personal finance management is challenging. We introduce an innovative expense-sharing web-based app powered by voice recognition and GPS tracking, revolutionizing expense monitoring in defined geographic regions. This app transforms how individuals manage expenses within specific locations.

The core functionality of our web-based app is twofold. First, it utilizes cutting-edge voice recognition capabilities to allow users to effortlessly input expenses by simply speaking them. This hands-free approach enhances user convenience, reduces manual entry errors, and expedites expense tracking.

Second, our app employs GPS technology to track users' geographical locations in real-time. It automatically calculates their expenses within predefined areas. If a user's expenses exceed a preset limit within a particular zone, the app triggers an alert, notifying the user of the limit breach. This feature acts as a safeguard against overspending and encourages responsible financial behaviour.

Conversely, if the user's expenses fall below the allocated limit, the app suggests budget allocations for unmet needs, ensuring financial goals.

Our app amalgamates cutting-edge technology with personal finance management, empowering users to effortlessly track and control their expenses while reinforcing responsible spending habits. By integrating voice recognition and GPS tracking, we aim to simplify expense management, enhance awareness, and promote financial well-being for users across the globe.

**Keywords**: Cost-sharing, Shared wallet, Bill splitting, Shared finances, IOU tracking

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# INTRODUCTION

In today’s fast-paced and interconnected world, managing personal finances has become an increasingly complex and challenging task. Balancing budgets, tracking expenses, and adhering to financial goals often demand time-consuming manual efforts and can be prone to errors. To address these challenges and usher in a new era of personal finance management, we introduce an innovative web-based application-an intelligent fusion of voice recognition and GPS technology.

This groundbreaking project aims to redefine the way individuals monitor and control their expenses within geographical areas. By harnessing the power of voice recognition, users can effortlessly record their expense through natural speech, eliminating the need for tedious manual data entry.

In parallel, our app employs GPS technology to provide real-time expenses tracking within pre-defined zones. It empowers users to set spending limits for specific locations and promptly sends alerts when expenses exceed these limits, promoting responsible behaviour.

Furthermore, our application is not merely a tracking tool; it actively assists users in achieving their financial goals. When expenses fall below allocated limits, the app suggests optimal budget allocations to fulfil unmet financial needs or savings objectives, making financial planning more accessible and actionable.

This project represents a commitment to user-centric design and leverages cutting-edge technology to simplify and enhance personal finance management. It embodies the vision of a future where financial well-being is attainable through seamless, efficient, and intelligent tools.

Welcome to a new era of personal finance empowerment.

# LITERATURE REVIEW

# Certainly, here’s a brief literature review for your project on a voice-activated expense tracking and geographical limit enforcement web-based app:

# Introduction:

# Managing personal expenses is a fundamental aspect of financial well-being, and numerous web-based apps have emerged to assist users in this endeavour. However, integrating voice recognition and GPS tracking to enforce geographical spending limits represents a unique approach to personal finance management.

1. **Existing Expense Tracking Apps:** Several expense tracking app such as Mint, YNAB (You Need a Budget), and Expensify have gained popularity. They offer features like expense categorization, budget creation and financial reporting. However, they lack real-time geographical expense control and voice recognition input.
2. **Voice Recognition Technology:** Voice recognition technology has evolved significantlywith the widespread adoption of virtual assistants like Siri and Alexa. This technology simplifies data input, reducing user friction in expense tracking. Research by Li et al. (2018) shows that voice input enhances user engagement and accuracy in mobile apps.
3. **Behavioural Economics and Financial Decision-Making:** Behavioral economics research, such as Thaler and Sunstein's "Nudge," emphasizes the importance of designing systems that promote responsible financial behavior. Real-time alerts for exceeding geographical spending limits align with these principles, encouraging users to make more informed financial decisions.
4. **GPS-Based Expense Tracking:** GPS-based expense tracking has been explored in research by Chen et al. (2016), who developed a location-based expense tracking system. Their work demonstrated the potential for monitoring expenses based on geographical context.
5. **User Experience and Adoption:** User experience is a critical factor in app adoption. Studies by Deterding et al. (2011) emphasize the importance of user-centred design and gamification elements to engage and retain users in finance-related apps. Conclusion: While existing expense tracking apps offer valuable features, there is a gap in the market

for an app that combines voice recognition technology with GPS tracking to enforce geographical spending limits.

***Conclusion*:** While existing expense tracking apps offer valuable features, there is a gap in the market for an app that combines voice recognition technology with GPS tracking to enforce geographical spending limits. This project aims to bridge this gap by providing users with a more intuitive and proactive approach to personal finance management, aligning with the principles of behavioural economics and user-cantered design.

This literature review provides an overview of the current state of expense tracking apps, voice recognition technology, GPS-based tracking, and relevant research areas, highlighting the unique value proposition of your project.

# DIFFERENT MODULES

* ***In the Expense Sharing Web-based App, users and administrators have distinct roles and responsibilities, each with specific rights and privileges to enhance their financial management process.***
* **Admin Rights:**
  + - * + **User Management:**

Create, edit, and delete user accounts.

Reset user passwords.

Assign roles and permissions to users.

View user activity logs.

* + - * + **Content Management:**

Add, edit, or delete content such as announcements, news, or FAQs.

Manage media files and uploads.

Control the visibility of content on the app.

* + - * + **Data Management:**

Access and export data for reporting purposes.

Import data if necessary.

Perform data backups and restores.

* + - * + **System Configuration:**

Configure application settings, including email notifications and alerts.

Manage system-wide parameters like default currency or time zone.

* + - * + **Security Management:**

Monitor and review security logs.

Implement security policies and access controls.

Manage security certificates and encryption settings.

* + - * + **Analytical and Reporting:**

Access advanced analytics and reporting tools.

Generate reports on user activity, system performance, and more.

* + - * + **Support and Helpdesk:**

Respond to user inquiries and support requests.

Provide assistance with technical issues.

Maintain a knowledge base or FAQ section.

* + - * + **Bug and Issue Tracking:**

Track and prioritize reported bugs and issues.

Assign tasks to developers for resolution.

* + - * + **Software Updates:**

Manage application updates and patches.

Schedule downtime for maintenance.

* + - * + **Role-Based Access Control (RBAC):**

Define roles (e.g., admin, moderator, support) with different permissions.

Assign roles to admin panel user based on their responsibilities.

* + - * + **Financial Management (if applicable):**

Manage financial transactions and payments within the app.

Monitor revenue and expense.

* + - * + **Users Feedback and Suggestions:**

Collect user feedback and suggestions for improvements.

Evaluate and prioritize feature requests.

* + - **Admin Responsibilities:**
* **Maintaining System Integrity:**
* Ensure the system operates smoothly and without issues.
* Monitor for any unauthorised activities or security breaches.
* **User Support:** Assist users with inquiries, technical problems, and account-related issues.
* **Content Management:** Keep app content up to date and relevant.
* **Data Management:**
* Safeguard user data and ensure its privacy and security.
* Regularly back up to data to prevent loss.
* **Security:** Implement and enforce security measures to protect user accounts and data.
* **Performance Monitoring:** Monitor system performance to ensure and responsiveness and reliability.
* **System Update:** Manage software updates and maintenance schedules.
* **Compliance:** Ensure the app compiles with relevant regulations and legal requirements.
* **Reporting:** Generate Reports on app usage, user behaviour, and system performance
  + - **User Rights:**
* **Account Creation:** Users have the rights to create their account on the Expense Sharing App.
* **Expense Entry:** Users can enter and manage their expense using the app’s features.
* **Access to Data:** Users have access to their own expense data for tracking and analysis.
* **Voice Recognition:** Users can utilize voice recognition for expense and other voice-activated features.
* **Expense Monitoring:** User can monitor their expenses in real-time, especially within defined geographical areas.
* **Notifications:** Users receive notifications if they exceed predefined limits in the geographical area.

**But if the limit does not exceed limit set by the user at the time of registration, then user has two choices:**

* To carry forward the left balance to next day.
* To spend the leftover balance in that day only.
* **User Profile Management:** Users can update their profile, including personal information and preferences. User can also update the Mode of running the app either manual (text-based mode) or voice-recognition mode (Speaking mode).
* **User Support:** Users have the right to seek assistance from the app’s support team in case of issues or inquires.
* **Data Privacy:** Users have the right to expect their personal and financial data will be kept secure and private.
  + - **User Responsibilities:**
* **Account Security:** Users are responsible for maintaining the security of their accounts, including choosing strong passwords and not sharing login credentials.
* **Accurate Expense Entry:** Users should enter their expenses accurately to ensure reliable financial tracking.
* **Responsible Spending:** Users are responsible for managing their spending and staying within predefined limits.
* **Feedback and Suggestion:** Users are encouraged to provide feedback and suggestions for app improvements.
* **Privacy Awareness:** Users should be aware of privacy settings and ensure their data is shred only as desired.
* **Compliance:** User must adhere to app’s terms of service and any relevant legal regulations.
* **Reporting Issues:** Users should report any technical issues or bugs encountered while using the app.
* **Data Backup:** Although data is typically managed by the app, users, may consider periodic data backups for their records.
* **User Guidelines:** Users should follow any user guidelines or best practices provides by the app to maximize their experience.
* **Respectful Behaviour:**  Users are expected to engage respectfully with others users and app administrators.

*By adhering to these rights and responsibilities, users and admin contribute to effective and secure operation of the Expense Sharing Web-based app while also benefiting from its features for personal finance management.*

# PROJECT OBJECTIVE

The project objective for your web-based voice-activated expense tracking and geo-limit enforcement app is to develop a robust and user-friendly application that addresses specific challenges in personal finance management. Here's a detailed project objective:

To create a web-based Voice-Activated Expense Tracking and Geo-Limit Enforcement App with the following key objectives:

1. **Seamless Expense Tracking:** Develop an intuitive and efficient system for users to effortlessly record their expenses using voice recognition technology, reducing the need for manual data entry.
2. **Real-Time Geo-Limit Enforcement:** Implement GPS tracking capabilities to enable users to set geographical spending limits for specific areas. When expenses in a designated area exceed the limit, the app will trigger immediate alerts to promote responsible spending.
3. **Financial Goal Fulfilment:** Provide users with actionable insights by suggesting optimal budget allocations when expenses in a given area are below the allocated limit. This feature will assist users in meeting their financial goals and savings objectives.
4. **User-Centric Design:** Design the application with a focus on user friendliness and accessibility, ensuring that users of varying technological proficiency can navigate and utilize the app effectively.
5. **Accuracy and Reliability:** Ensure that the voice recognition and GPS tracking functionalities are accurate, reliable, and responsive to user commands and geographical data.
6. **Enhanced Financial Awareness:** Enable users to gain a deeper understanding of their spending patterns, financial habits, and areas for potential improvement through data visualization and analysis.
7. **Promotion of Responsible Financial Behaviour:** Encourage responsible financial behaviour by promptly notifying users when they exceed predefined spending limits in specific geographic areas.
8. **Comprehensive Documentation:** Thoroughly document the development process, research findings, and user testing results to provide transparency and support future enhancements.
9. **User Feedback and Iterative Development:**  Continuously gather user feedback and consider it for iterative development, aiming to refine and enhance the application based on real-world user experience and needs.
10. **User Adoption:** Promote user adoption and engagement through effective marketing and user education strategies.
11. **Sustainability and Scalability:** Ensure that the application is sustainable and scalable, allowing for potential growth in user baseand feature in the future.

The primary objective is to deliver a web-based application that empowers users to manage their finances more effectively, promotes responsible spending, and simplifies the often-challenging task of personal finance management in today’s dynamic and digitized world.

# RESEARCH METHODOLOGY

The research methodology for your project on a voice-activated expense tracking and geographical limit enforcement web-based app should encompass several key steps and methods to achieve the project objectives. Here’s a suggested research methodology:

1. **Literature Review:** Begin with an extensive literature review to gain insights into existing expense tracking apps, voice recognition technology, GPS-based tracking, behavioural economics, and user-cantered design principles. Identify gaps in the literature that your project aims to address.
2. **Data Collection:** Collect data on user preferences and pain points related to expense tracking through surveys, interviews, or user feedback from existing finance apps. Gather data on voice recognition technology’s capabilities and limitations. Collect GPS data to understand location-based expense patterns.
3. **Prototype Development:** Develop a prototype of the web-based app that integrates voice recognition, GPS tracking, and expense tracking functionalities. Use agile development methodologies to iteratively improve the prototype based on user feedback.
4. **Usability Testing:** Conduct usability testing with a diverse group of potential users to evaluate the app’s user interface, voice recognition accuracy, and GPS tracking precision. Gather feedback on the app’s design, functionality, and overall user experience.
5. **Behavioural Economics Analysis:** Collaborate with behavioural economics experts to design experiments or features that align with behavioural economics principles, such as setting and enforcing spending limits. Implements A/B testing to measure the effectiveness of the features in promoting responsible financial behaviour.
6. **Data Analysis:** Analyse the collected data, including user feedback, usability testing results, and behavioural economics experiments. Use statistical analysis to identify patterns in spending behaviour and the impact of app features on user financial decisions.
7. **App Refinement:** Based on data analysis, refine the app’s design and functionality to address the user’s preferences and improve the effectiveness of behavioural economics interventions. Continuously update the prototype through agile development cycles.
8. **Security and Privacy Assessment:** Conduct a security and privacy assessment of the app to ensure user data protection and compliance with relevant regulations.
9. **User Acquisition Strategy:** Develop a user acquisition strategy, including marketing plans and user onboarding processes, to encourage app adoption.
10. **Evaluation and Validation:** Perform rigorous testing to validate the accuracy of voice recognition and GPS tracking functionalities. Evaluate the effectiveness of the web-based app in helping users manage their expenses and adhere to spending limits.
11. **Documentation and Reporting:** Document the entire research process, including methodologies and findings, and create comprehensive reports and presentations for stakeholders and potential investors.
12. **Iterative Improvement:** Continuously iterate on the app based on user feedback, data analysis, and changing market conditions to ensure its long-term visibility and user satisfaction.

By following this research methodology, you can systematically develop, test, and refine your voice-activated expense tracking app while ensuring that it meets user needs, aligns with behavioural economic principles, and maintains data security and privacy.

# PROJECT OUTCOME

The expected outcomes of your project, which focuses on developing a voice-activated expense tracking web-based app with geographical limit enforcement, are as follows:

1. **Effortless Expense Input**: Users will easily input expenses using voice recognition,

Streamlining data entry and enhancing usability.

1. **Geographical Expense Monitoring:** The app will track real-time expenses within predefined zones, enabling effective spending control.
2. **Limit Alerts:** Users will receive alerts for overspreading in specific areas, promoting responsible financial behaviour.
3. **Fulfilment Goal Fulfilment:** The app will suggest budget allocations to meet savings goals when expenses fall below set limits.
4. **Improved Financial Awareness:** Users will gain better insight into their spending habits within different locations, empowering them to make informed financial decisions.
5. **Enhanced User Engagement:** Integrating voice recognition and location-based features will make the app more engaging and user-centric, potentially increasing user adoption and retention.
6. **Contribution to Behavioural Economics Research:** The project aligns with behavioural economics principles by providing nudges and alerts that financial decision-making.
7. **Research Insights:** The project may yield valuable insights into user behaviour and preferences regarding voice-based input and geographical expense tracking, which could be of interest to researchers and future app developers.
8. **Financial Well-Being:** Ultimately, the app aims to contribute to users’ financial well-being by promoting responsible spending, savings, and financial goal attainment.
9. **Market Potential:** Successful development and implementation of the app could have commercial potential in the personal finance app market, with the possibility of revenue generation through premium features or partnerships.

In Summary, the project’s outcome is to create an innovative, user-centric app that leverages voice recognition and geographical tracking to simplify expense management, enhance financial awareness, and promote responsible spending, ultimately contributing to users’ financial well-being and potentially finding a place in the market.

# PROPOSED TIME DURATION

# The Time Duration for completing the development of a web-based voice-activated expense tracking and geo-limit enforcement app can vary depending on several factors, including the complexity of the app, the size of the development team, availability of resources, and the project scope. However, here’s a general breakdown of the timeframes involved in such a project:

# Project Initiation (Week 1): This is the Initial phase where the team is formed, project objectives are defined, and the project plan is developed.

# In Gantt chart (Project Initiation) is represented by the Light Blue colour.

# Requirement Gathering (Week 1-2): During this phase, the team collects and documents the requirements for the project. This includes understanding what the software should do and what features is should have.

# In Gantt chart (Requirements Gathering) is represented by Light Green.

# System Design (Week 2-3): Once the requirements are gathered, the system design phase begins. This involves creating a detailed plan for how the software will be structured and how various components will work together.

# In Gantt chart (System Design) is represented by Light Yellow.

1. **Frontend Development (Week 2-4):** Frontend Development starts during this week, focusing on building the user interface and user experience components of the software.

**In the Gantt chart (Frontend Development) is represented by Light Orange.**

1. **Backend Development and Voice Recognition (Week 3-5):** Backend Development begins in Week 4 and continues to Week 5. This phase involves creating the server-side logic, databases, and other backend components of the software.

This task run in parallel with backend development. It involves integrating voice recognition functionality into the software.

**In the Gantt chart (Backend Development and Voice Recognition) is represented by Peach.**

1. **Testing and Quality Assurance and User Testing (Week 4-6):** In this phase, the software is thoroughly tested to identify and fix and issues or bugs. Quality assurance processes are implemented to ensure the software meets the desired quality standards.

User Testing is conducted during Week 5 to get feedback from actual users. This feedback helps identify usability issues and fine-tune the software based on user experiences.

**In the Gantt chart (Testing and Quality Assurance and User Testing) is represented by Light Pink.**

1. **Finalizing App (Week 5-6):** Based on the feedback received from user testing and ongoing testing and QA, any final adjustments and refinements are made to the application.

**In the Gantt chart (Finalizing App) is represented by Light Gray.**

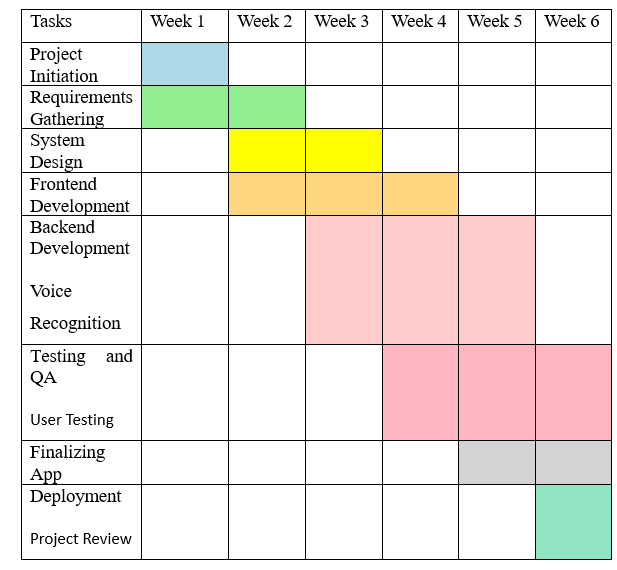
1. **Deployment and Project Review (Week 6):** This is the phase where the software from

user testing and ongoing testing and QA, any final adjustments and refinements are made to the application.

After the deployment, a project review is conducted to assess the overall project, evaluate the outcome, and document lessons learned.

**In the Gantt chart (Deployment and Project Review) is represented by Light Teal.**

GANTT CHART



**Figure 1: Gantt chart for developing the Expense Sharing**

**Web based App**

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