TATAKAE

ShunoBondhu: A Voice-Assisted Mobile App for Paddle Rickshaw Pullers in Bangladesh

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Pain Point:

Rickshaw pullers in Bangladesh face multiple challenges while navigating unfamiliar routes, managing earnings, and ensuring personal safety. Despite being smartphone users (at least partially), they struggle with digital literacy, technology usability, and lack of tailored digital tools. These issues make it harder for them to navigate unfamiliar routes, monitor their safety, and track income effectively. To address these gaps, we propose a voice-first mobile application designed specifically for rickshaw pullers.From our formative research, we identified four major key pain points:

(a) access quick emergency support (Highly vulnerable to theft/accidents;desire quick emergency alert)

(b) navigate routes safely (Peers and landmarks over maps)

(c) keep track of earnings (Casual system; desire easy summaries)

(d) speed monitoring when driving (Lack of speed control, leading to accidents).

Tasks supported by the   prototype: Every task is outlined as an action in the real world and how a successful outcome would appear and how a person interacts with the features.

Task 1 - Log trip earnings and show daily summary by voice:

Real-world action: After a trip, the puller records the fare: "৫০ টাকা জমা হয়েছে". In response, the app adds the trip amount to the day's total and the app vocalizes the updated total.

Key subtasks supported in prototype:

- For each trip, the puller gives a quick voice input(amount + area + destination + time). The app then suggests the exact fare for that route based on distance and time.
- Trips are grouped automatically by day, and the home screen shows today's total earnings.
- At day's end, the app gives a voice summary of earnings, e.g., 'আজ আপনার মোট আয় ৯৫০ টাকা। Additionally, after every ১০০০ টাকা milestone, the app congratulates the puller with a special voice message.

Task 2 - Find & follow a safe, landmark-based route to a destination:

Real-world action: The puller wants to go to Badda bus stand near the big mosque (বাড্ডা বাইতুল আমান জামে মসজিদ). In response, the app provides vocal directions by landmarks, the user follows, and the app confirms arrival at the destination.

Key subtasks supported in prototype:
- The puller speaks the destination in Bangla, and the app recognizes it for navigation.
- The system suggests the safest path by landmarks; voice provides step-by-step directions.
- Rickshaw pullers can say 'repeat' or 'slow down' for voice guidance, or tap large 'Next' and 'Back' buttons for consistent app navigation.

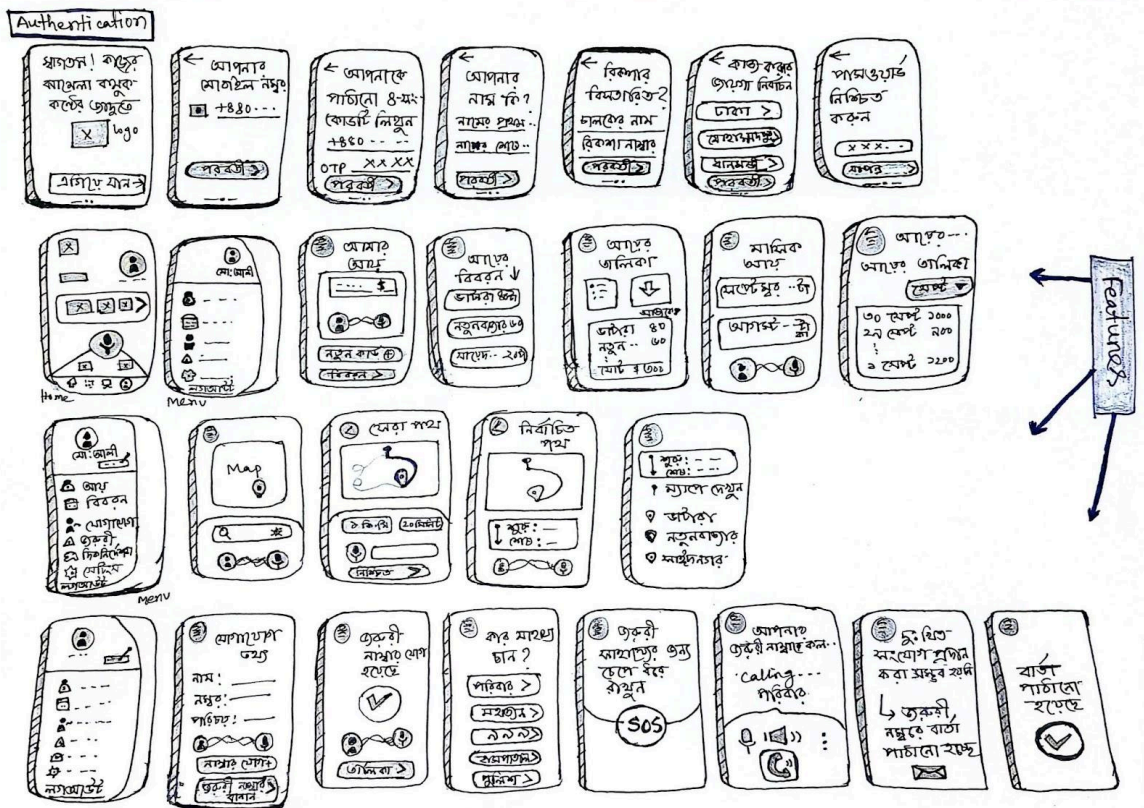**Task 3 - Trigger SOS & notify selected contacts:**
Real-world action: The puller shouts or presses and holds the red SOS button. In response, The app sends an SMS/automatic voice call (and small pre-recorded location message) to selected contacts and plays an alarm to attract attention.
Key subtasks supported in prototype:
- The user can send an emergency alert by holding the big red SOS button or saying 'সাহায্য' / 'SOS'.
- The app automatically fetches last-known location (GPS if available, otherwise landmark-based fallback) and sends an SMS with a short Bangla message and link.
- Optionally call the first contact if SMS fails; play loud alarm through phone speaker.

Paper Prototype Sketches (low-fidelity): Below are simplified sketches that capture the primary screens and interactions used in early prototyping.
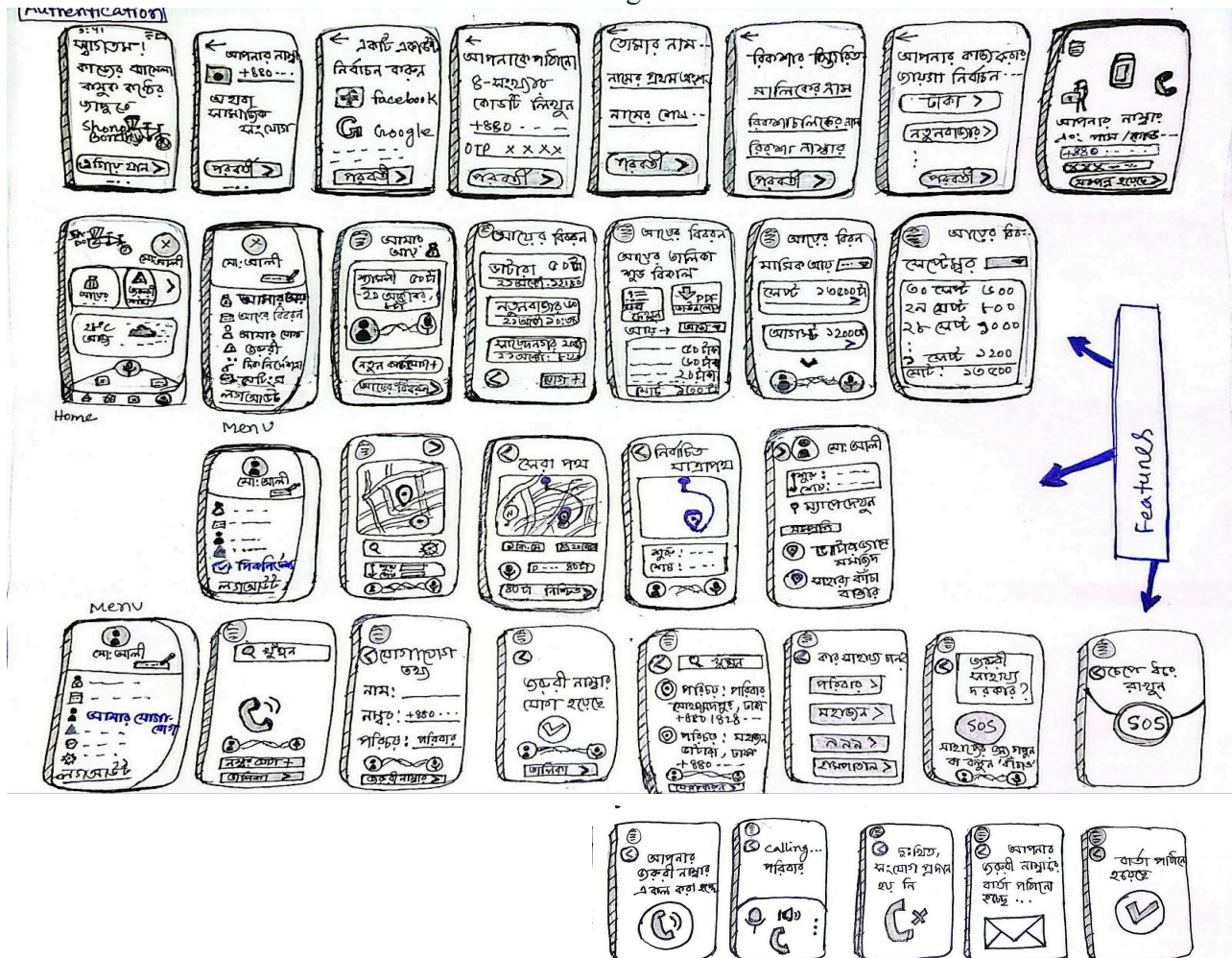
Initial sketches:

Insights from Peer Evaluation: The feedback from our peers was valuable in identifying areas where our prototype could be made more user-friendly and interactive. They emphasized the

need for smoother user interaction and clearer navigation flows. Based on suggestions, we introduced several improvements, including the addition of a setup button, the restructuring of page navigation, and the inclusion of back and next buttons to ensure smooth and intuitive movement between screens. These changes made the overall design more aligned with the needs of end users and enhanced usability.
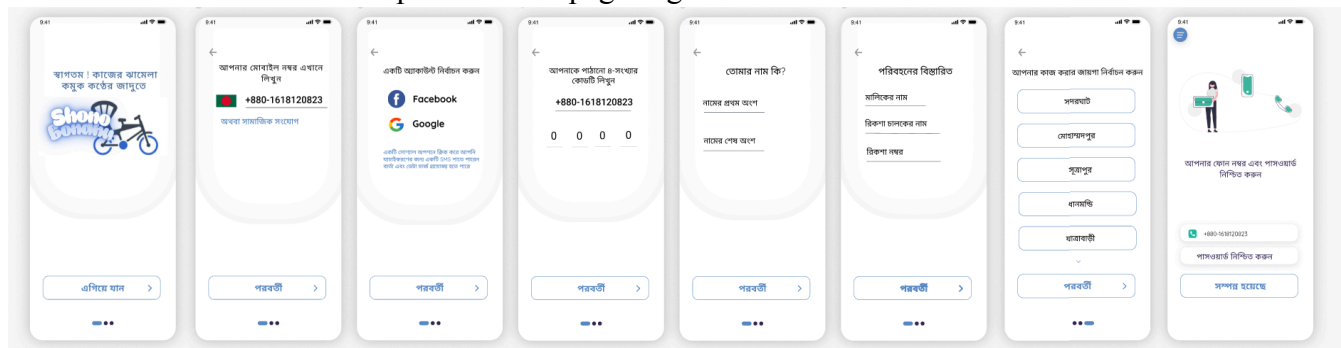
After Peer Evaluation: The new sketches are given below

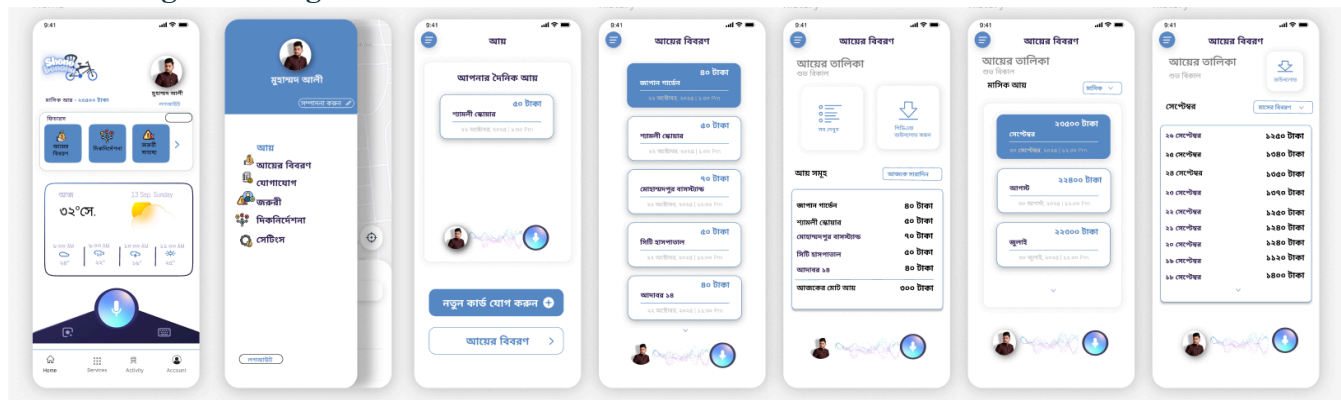**Higher-fidelity prototype (Figma Design)**

Initial Figma Prototype before evaluation : We first created an initial Figma prototype based on feature-wise ideas and early sketches. This version helped us visualize the core layout and functionality. After peer evaluation with team members, we used the feedback to finalize the design.

Changes Made in Response to Peer Evaluation: Based on peer feedback, we improved our prototype to enhance interactivity and user-friendliness. We added a setup button for easy user configuration, restructured page navigation for better flow, and implemented a root navigation system for quick access to main features. Back and next buttons were also introduced for smooth and predictable screen transitions.
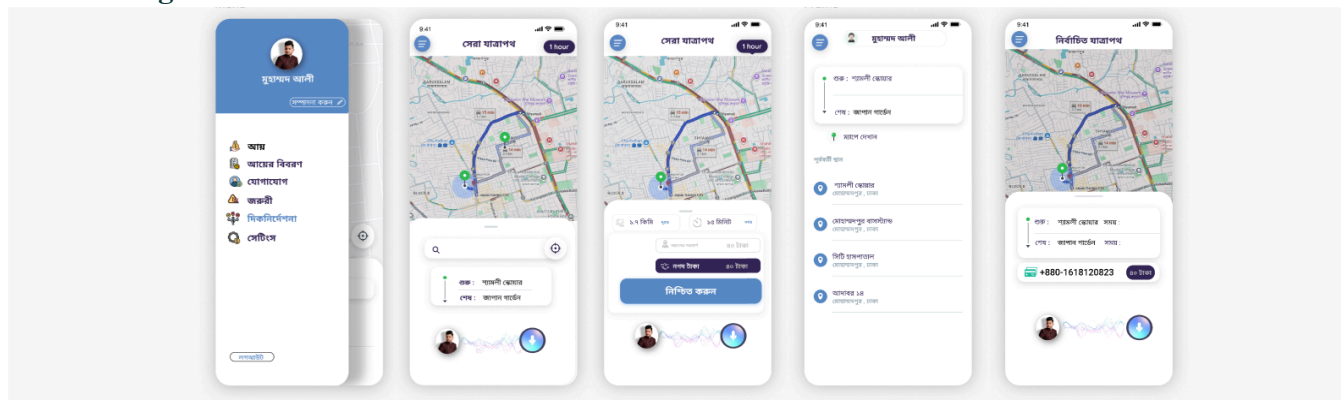
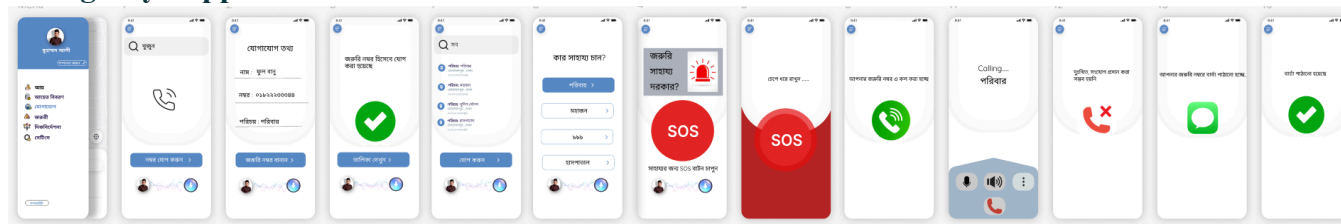**After Peer Evaluation:** The updated home page is given below:

The Earnings Tracking Feature:

Route Navigation Feature:

Emergency Support Feature:

Team Contribution: Our project tasks were distributed among team members to leverage individual strengths and ensure efficient progress. The contribution of each member is given below:

Paper Prototype Design: Nusrat Jahan Bably was responsible for creating and refining the paper prototypes. Kona and Ananna conducted the peer evaluation of the paper prototypes.

Figma Prototype Design: Kona Moni and Ananna Saha developed the higher-fidelity prototypes using Figma. Every member conducted the peer evaluation of the paper prototypes.

Report Development: Md. Al - Emran and Md. Ammar Hossain worked on writing and organizing the project report, which was later rechecked by every member of the team .

Presentation Slides: Mohin prepared the presentation slides for showcasing the project, while all team members reviewed and incorporated necessary updates to ensure their accuracy and completeness.

Appendix:

Before & After Evaluation: 📁 Paper_Prototype

Before Evaluation: 🔁 Figma

After Evaluation (complete version): 🔁 Figma