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# Project Proposal Document

Course Code: CSE 4451

Section : A

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### Project Title:

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

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**Group-Tatake**

**The Problem (Human–Computer Interaction Lens)** Paddle rickshaw pullers in Bangladesh face daily challenges: navigating busy roads, finding passengers, ensuring safety, and tracking income — all while having limited literacy and minimal smartphone experience. Traditional ride-hailing or navigation apps are made for people who can read fast, understand maps, and use touchscreens easily; simply with high digital literacy and are visually dense, making them unusable for this audience.

From an **HCI perspective**, the pain point lies in the **mismatch between existing interaction designs and the cognitive, linguistic, and environmental realities** of these users. Our aim is to design an interface and interaction model that works the way rickshaw pullers actually think, work, and live — easy to use, clear to understand, and built for their daily reality. **We want to make an app that fits them — not force them to fit the app.**

**Target Users:** Paddle rickshaw pullers with low literacy, limited smartphone familiarity, and high dependence on auditory cues in their work environment.

**Formative Component (Understanding the Human Context):** We will apply **user-centered design** by deeply understanding the work environment, physical constraints, and information-processing habits of rickshaw pullers.

**Recruitment:** Partner with local rickshaw unions and tea stalls — trusted gathering points. Offer small incentives (**snacks, mobile recharge etc**).

- **Ethnographic Observation** – We will spend time at rickshaw stands and ride along short trips to quietly observe how they work, what challenges they face, and how they currently use their phones.
- **Contextual Inquiry + Interviews** – While they are on the job, we will ask open-ended questions in Bangla about how they find passengers, navigate, and handle problems. This helps us see their needs in action, not just in words.
- **Behavioral Mapping** – We will note the main locations, routes, and hotspots where they spend their time, so we know exactly where the app's features (like navigation or SOS) would be most useful.
- **Focus Group** – Once we have basic sketches of the app, we will gather 4–5 or more rickshaw pullers in a group discussion to see their reactions, compare opinions, and get ideas for improvement.

**Design Component (Interaction & Usability Focus):** We will design **mid-to-high fidelity prototypes** focusing on **multimodal interaction**:

- **Primary:** Voice-first interface in Bangla (speech-to-text + text-to-speech).
- **Secondary:** Large, high-contrast icons for quick recognition.
- **Tertiary:** Minimal text, simple navigation flow, 1–2 taps for key actions.

#### Core Features to Prototype:

- SOS button for emergencies with haptic feedback.
- Earnings summary with visual progress indicators.
- Audio safety alerts based on GPS location.
- Speed monitoring and alerts.
- Voice-triggered ride request acceptance & navigation.

Non-essential features (e.g., profile customization, advanced settings) will be excluded in the initial design to reduce cognitive load.

**Evaluative Component (Usability Testing & Feedback) & Methods:** We will test the prototype with 5–8 rickshaw pullers in a realistic environment (rickshaw stand or during short rides).

- **Think-aloud protocol** – in Bangla, to capture interaction reasoning.
- **Task completion metrics** – time taken, success/failure rate.
- **Oral SUS (System Usability Scale)** – adapted for low literacy.
- Observing **error patterns** to refine UI/interaction.

**Thank you**