LIBR

A Moderated, Censorship-Resilient Social Network Framework

LIBR is a protocol for building digital public forums and social networks that are both **provably censorship-resilient** and **safeguarded against harmful or illegal content**.

Traditional **centralized** platforms (Facebook, Reddit, Twitter, etc.) control their own databases, which lets them remove or block content at will—undermining free expression. Fully decentralized networks avoid that single point of control, but without any moderation they may become overrun by offensive or malicious posts, turning communities chaotic rather than constructive.

LIBR strikes a balance by using a **replicated DHT** (Distributed Hash Table) setting for **partial immutability**—cheaper and faster than storing every message on a full blockchain—while storing necessary global configuration on a **public Blockchain** (eg., Ethereum). At the same time, content, for each community, is vetted (or approved) by a **decentralized moderation quorum** (a majority of moderators), so that no single moderator can decide the fate of a message. Only when a majority of moderators approve does a message get stored and shared, keeping the forum both open and safe.

The LIBR protocol is currently implemented as a working prototype, with core components—clients, database nodes, and moderators—communicating over a custom decentralized protocol. The system simulates blockchain-backed global state resolution, and the full implementation can be found here:

GitHub Repository: github.com/DALDA-IITJ/libr

Concept Document:
github.com/DALDA-IITJ/libr/blob/main/concept_document.pdf

Development Plan under Devlup Labs Summer of Code

As part of **SoC**, the LIBR project will evolve from a working prototype into a complete, end-to-end platform, deployable and usable in the real world. The following milestones are planned:

- **Blockchain Integration**: Integrate a real blockchain (likely Ethereum) to manage the global state and consensus for communities.
- **Web Client**: Build a fully functional, user-facing web application using React.
- **Mobile Client**: Develop a mobile client using either React Native or Flutter, to allow broader and more accessible participation.
- **Governance Model**: Design and implement a modular, transparent governance system for node behavior, moderator onboarding, and parameter updates.
- **Core Optimization**: Improve the underlying protocol for scalability, modularity, and performance.
- **Agile Lifecycle**: We'll follow a startup-style agile lifecycle to ensure rapid iteration, feedback incorporation, and adaptability to challenges during development.
- **Software Testing and Metrics**: We'll be implementing robust software testing and track key metrics such as performance, fault tolerance, and usability to continuously refine the system.

Tech Stack

- Smart Contracts: Solidity
- Blockchain Interface: Go Ethereum
- Networking Layer: libp2p
- Core Protocol Logic: Go Lang
- Web Client: React
- Mobile Client: Flutter

*Note: This is a **tentative** stack, and we are open to new suggestions that may be better suited to our needs.*

Roles and Opportunities

We are seeking passionate individuals for the following roles :

1. **Frontend Developer**
    - Build user-friendly interfaces for the web and mobile clients.
    - Work on UI/UX improvements and ensure responsive design.
    - Collaborate with the team to translate user requirements into functional features.

2. **Backend and Network Developer**
    - Develop and maintain backend APIs to support client, mod and node communication.
    - Optimize the networking layer for performance and scalability.
    - Ensure seamless interaction between different components of the system.

3. **Protocol Developer**
    - Help design and implement core decentralized protocols.
    - Work on features like message validation, quorum-based decisions, and DHT optimization.
    - Assist in debugging and refining the protocol logic.

4. **Blockchain Developer**
    - Implement and test blockchain-based features like global state management and consensus.
    - Develop smart contracts and integrate them with other components.
    - Test blockchain interactions for performance, security, and correctness.

Note: The number of mentees and their division will be at our discretion.

Concepts to Explore

Theory:

- Basics of Peer-to-Peer Architecture:
  How Peer to Peer (P2P) Network works | System Design Interview B…

- Basics of Asymmetric Cryptography & Digital Signatures:
  Encryption - Symmetric Encryption vs Asymmetric Encryption - Crypt…
  Public and Private Keys - Signatures & Key Exchanges - Cryptograp…

- Basics of Decentralized Ledger & Blockchain:
  But how does bitcoin actually work?
  What is Ethereum? A Beginner's Explanation in Plain English

- Distributed Hash Table: Kademlia, Explained

- Byzantine Consistent Broadcast: Byzantine Generals Problem (related)
- The LIBR Concept Document

Proposal Expectations

- **General & Contact Information**
- **Technical Understanding** of the Project and Concept Document
- **Role Application**: Clearly state the roles you wish to apply for and provide a justification explaining why you are suitable for them in this project.
- **Brief Proposal for a Governance Scheme**: Should highlight a suitable method for governance within the protocol, such as electing and slashing moderators. *(If you do not understand, just mention it. It isn't a quiz :D)*
- **Use Case**: Suggest a use case other than those already mentioned in section 9 of the Concept Document.
- **Suggestions** for the project (if any)
- **Past Projects**
- **Campus Involvement and Commitments** (with priority)
- **Time Commitment** to the project (in Hours per Week)
- Anything else we should know about you

Brownie points for finding already existing projects or products out there similar to LIBR.

– Let's keep this open ended, share new ideas and insights for the project. We welcome innovative suggestions and expect to be amazed by your thoughts :)

Prerequisites

There are no strict prerequisites to join this project. However, a passion for learning and consistency in your efforts are a must. Rest can all be learned along the way.

Do reach out to us if you have any doubts regarding the project or proposal submission. It is also expected that you familiarise yourself, or atleast have an overview with the used concepts such as **P2P Networks**, **Decentralization** and **Blockchain** as this will help you understand the project.

You should also skim through the concept document, especially the **Abstract**, the **Addressed Issues** (1.1), the **Underlying Theoretical Concepts** (3) and **Use Case** (9)

Contact Us

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