LIVEDOCS: A PEER-TO-PEER REAL-TIME COLLABORATIVE DOCUMENT EDITOR USING WEBRTC AND CRDTS

**A PROJECT REPORT**

***Submitted by***

|  |  |
| --- | --- |
| **ARUNPRASAD S** | **(Reg. No. 921321205015)** |
| **CHARANKUMAR E G D** | **(Reg. No. 921321205029)** |
| **DHARANI DHARAN R** | **(Reg. No. 921321205032)** |

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**ANNA UNIVERSITY :: CHENNAI 600 025**

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**ANNA UNIVERSITY : CHENNAI 600 025**

**BONAFIDE CERTIFICATE**

Certified that this project report “**LIVEDOCS: A PEER-TO-PEER REAL-TIME COLLABORATIVE DOCUMENT EDITOR USING WEBRTC AND CRDTS”** is the bonafide work of **“ARUNPRASAD S (Reg.No. 921321205015), CHARANKUMAR E G D (Reg.No. 921321205029), DHARANI DHARAN R (Reg.No. 921321205032)”** who carried out the project work under my supervision.

|  |  |  |
| --- | --- | --- |
| **Signature** |  | **Signature** |
| **Dr. A. Vincent Antony Kumar** |  | **Mrs. A. Sangeetha** |
| **Head of the Department** |  | **Supervisor** |
|  |  | **Assistant Professor** |
| **Department of Information Technology** |  | **Department of Information Technology** |
| **PSNA College of Engineering and Technology, Dindigul** |  | **PSNA College of Engineering and Technology, Dindigul** |

**Submitted for the University Viva – Voce held on …………….**

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| --- | --- |
| **INTERNAL EXAMINER** | **EXTERNAL EXAMINER** |

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**ABSTRACT**

LiveDocs is a decentralized, real-time collaborative document editor designed to enable seamless and efficient collaboration without reliance on centralized servers. Unlike traditional cloud-based solutions such as Google Docs, LiveDocs utilizes WebRTC for direct peer-to-peer (P2P) communication and Yjs (Conflict-Free Replicated Data Types: CRDTs) for distributed data synchronization. This architecture ensures low-latency collaboration, enhanced fault tolerance, and seamless scalability, supporting millions of concurrent users. Key features include real-time editing, role-based access control, and instant notifications, all powered by a resilient P2P network. Secure authentication is ensured through JWT-based access control, enabling efficient document indexing and user management while delivering a modern and sleek user experience. By eliminating centralized infrastructure, LiveDocs reduces server costs, enhances scalability, and improves fault tolerance, making it an ideal solution for teams, enterprises, and large-scale applications requiring secure and real-time document collaboration.

**Keywords:**

Peer-to-Peer Collaboration, Real-Time Document Editing, WebRTC, CRDTs (Yjs), Decentralized Collaboration, JWT Authentication.

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