

Token-Based Secure Event Management and Attendee Authentication System

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Abstract

Event management increasingly depends on information technology to streamline planning, invitations, and attendance verification. Current solutions often require manual coordination or expensive hardware such as QR codes or RFID. This study presents a secure web-based Event Management System (EMS) that uses tokenized email verification for automatic invitation issuance and online verification of attendees. Developed with Next.js 13, Firebase, and EmailJS, the system allows event planners to create events and send personalized one-time links via email. Guests can register through these links and receive a verification email with event details and a secure one-time token (OTT) for access. This token is checked at check-in through a robust mechanism that ensures it is used only once and allows real-time attendance tracking. The framework improves reliability, reduces administrative tasks, and enhances traceability compared to traditional systems. It also tackles problems such as phantom registrations and unauthorized access using token hashing and real-time verification. Initial testing shows that the tokenized email method is as effective as QR or RFID technologies but at a substantially lower cost. This research provides a scalable, cost-effective solution for event planners seeking greater automation and better attendee management.

Index Terms

Event Management System (EMS), Email-based Invitations, One-Time Token (OTT), Secure Attendance Tracking, Web Application, Event Verification, Real-Time Check-in, Tokenized Authentication, Event Planning Automation, Low-cost Event Solutions