TrackNEnroll: Student Admission Categorization System 2

Ms. Kaveri Jayshingh Raul[1] Ms. Mayuri Kiran Khairnar[2] Ms. Kamini Vikas Chaudhari[3] Ms. Tanushree Somnath Shinde[4] Mrs. S. S. Jadhav[5]

[1,2,3,4]Student [5]Lecturer

[1,2,3,4,5]Department of Information Technology

[1,2,3,4,5]MVPS's Rajarshi Shahu Maharaj Polytechnic, Nashik, Maharashtra, India

Abstract — Admission lead management in educational institutions requires coordination among administrative staff, departments, and authorities, yet traditional methods often cause data duplication, uneven workload, poor monitoring, and limited accountability. This paper presents TrackNEnroll: Student Admission Categorization System, a centralized, role-based platform designed to streamline student lead handling. The system includes four dashboards — Admin Department, HOD, Teacher/Staff, and Principal — each responsible for controlled lead distribution and tracking. Students are added manually or via Excel upload and allocated through automatic or manual methods to ensure balanced workload. Staff interact with leads through a calling interface, and task completion is validated using a proof-based verification process involving call log screenshots, dates, and durations. The platform further provides performance analytics, lead status filtering, internal messaging, and AI-assisted support. The Principal dashboard offers institution-level insights into departmental performance and lead progress. By combining automation with verification, TrackNEnroll improves transparency, reduces duplication, strengthens accountability, and supports data-driven admission management.

Keywords: Admission System, Lead Management, Role-Based Access Control, Workload Distribution, Performance Monitoring, Data Verification, Educational Administration Automation

I. Introduction

Admission management plays a key role in educational institutions, influencing student intake, departmental workload, and academic planning. Traditional manual methods such as spreadsheets and informal communication often cause data duplication, uneven lead distribution, poor follow-up tracking, and limited visibility for authorities. These inefficiencies increase staff workload and reduce accountability across departments. TrackNEnroll: Student Admission Categorization System is proposed as a centralized, role-based digital platform to streamline admission lead handling. The system operates through four dashboards — Admin Department, HOD, Teacher/Staff, and Principal — forming a hierarchical workflow. Student leads are added manually or through Excel uploads and distributed automatically or manually to ensure balanced allocation. Teachers contact students via a structured calling interface and update lead status, while a proof-based verification process using call log screenshots, dates, and durations ensures task authenticity. The Principal dashboard provides institution-level insights including departmental performance, lead status distribution, and verification tracking. Additional features such as lead filters, internal messaging, staff approval control, activity logs, and AI assistance enhance coordination and transparency. By integrating automation with supervised validation, TrackNEnroll improves efficiency, accountability, and decision-making in institutional admission management.

II. Literature Review

Existing research on admission management systems primarily focuses on digitizing records and simplifying application processes. Sharma and Kulkarni (2018) developed a web-based admission system to reduce paperwork and centralize data, but it lacked post-inquiry tracking and role-based dashboards. Kumar and Verma (2018) proposed an online enrollment system that streamlined applications, yet did not include lead categorization, call tracking, or analytics. Patil and Deshmukh (2019) introduced a centralized student information system for academic data integration; however, it did not address inquiry or admission lead workflows. Mehta and Shah (2019) presented a CRM-based enrollment system that improved follow-up communication but lacked real-time performance monitoring for authorities. Singh and Mishra (2020) designed a cloud-based admission system with real-time synchronization, though it did not support structured role-based lead distribution or call status tracking. Broader studies highlight related advancements. Remus (1989) emphasized the importance of simplified decision-support systems for users with varying expertise. Jadhav et al. (2023) incorporated predictive analytics in mentoring systems, while Abe et al. (2024) demonstrated the efficiency of online admission platforms. Nguyen Nang Hung Van et al. (2025) and Li et al. (2025) explored AI and analytics-driven admission decision support. Despite these developments, limited attention has been given to hierarchical workflow control and proof-based staff accountability. TrackNEnroll addresses this gap by integrating centralized lead handling, role-based dashboards, automated and manual workload distribution, verification of staff activities, and real-time institutional monitoring within a unified platform.

III. System Design & Methodology

A. Tools and Technologies

- Frontend: React with TypeScript, Tailwind CSS, Vite, and React Router DOM; state managed using React Context API and Hooks.
- Backend: Node.js with Express.js REST APIs.
- Database: Firebase Firestore for lead data, SQLite3 for structured storage, and Firebase Authentication for secure login.
- Libraries & Deployment: XLSX for Excel handling, jsPDF for reports, and Vercel for deployment.

B. Workflow

Student leads are added by the Admin via manual entry or Excel upload and stored in an inflow pool. Leads are distributed to departments automatically or manually, then further assigned to staff by HODs. Staff contact students, update lead status, and submit call log proof (screenshot, date, duration) after completing tasks. The Admin verifies submissions, and all updates are reflected in dashboards for HOD and Principal monitoring.

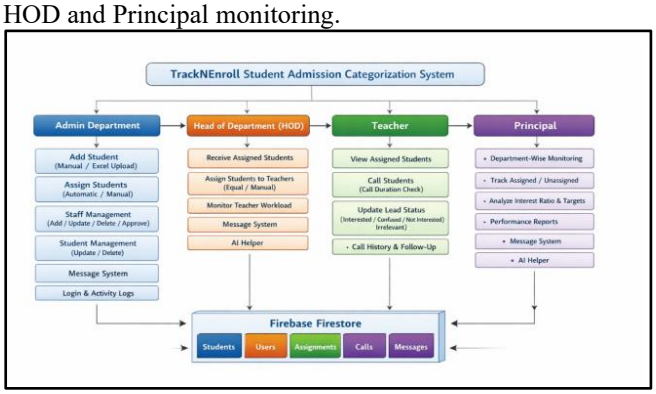


Fig. 1: System Design

C. Modules

- Admin Module: Lead entry, distribution, staff approval, verification, and logs.
- HOD Module: Staff allocation and department performance tracking.
- Staff Module: Student calling, status updates, history, and verification submission.
- Principal Module: Institution-wide monitoring of performance, lead status, and targets.

IV. Implementation & Working

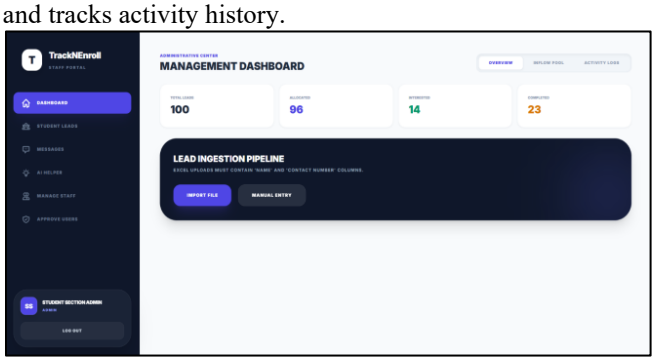
TrackNEnroll is implemented as a role-based web system using React with TypeScript and Tailwind CSS on the frontend, built with Vite and managed through React Router DOM, Context API, and Hooks. The backend uses Node.js and Express.js to provide REST APIs. Data is stored in Firebase Firestore, with Firebase Authentication ensuring secure, approval-based login, and SQLite3 used for structured storage. Excel uploads are handled using XLSX, reports via jsPDF, and deployment is done on Vercel. In operation, the Admin adds student leads manually or through Excel, which enter an inflow pool. Leads are distributed to departments and then to staff by HODs. Teachers contact students, update their status, and submit call log proof (screenshot, date, duration) after completing assigned leads. The Admin verifies submissions, and all updates are reflected in dashboards, allowing HODs and the Principal to monitor performance, lead status, and target completion in real time.

V. Results & Discussion

The implementation of TrackNEnroll demonstrates improved efficiency and accountability in student admission management.

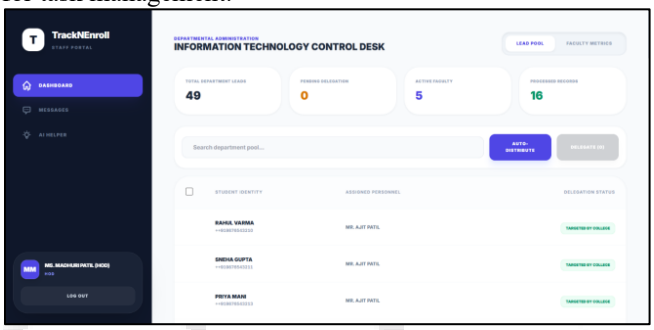
A. Admin Dashboard

Handles manual and Excel-based student entries, maintains inflow lists, distributes leads automatically or manually, approves staff/HOD registrations, verifies staff submissions, and tracks activity history.



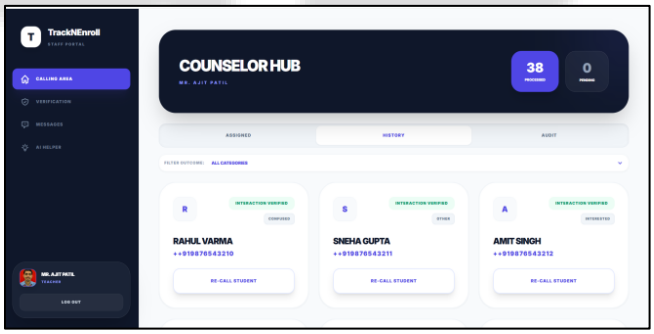
B. HOD Dashboard

Receives departmental leads, assigns them to staff, monitors faculty metrics, and facilitates messaging and AI assistance for task management.



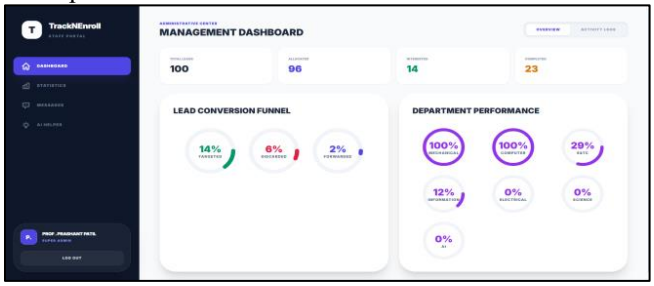
C. Teacher/Staff Dashboard

Allows staff to contact students, update lead status (Interested, Not Interested, Confused, Irrelevant), maintain call history, and submit verification forms with call logs for Admin review.



D. Principal Dashboard

Provides institution-wide monitoring of all departments, showing lead status distribution, assignment percentages, target completion, and departmental performance with real-time updates from HODs and staff.



VI. CONCLUSION & FUTURE SCOPE

TrackNEnroll provides a structured and transparent admission management system that combines role-based workflow, controlled automation, and centralized monitoring to improve inquiry handling and follow-up efficiency in educational institutions. By implementing hierarchical dashboards for Admin, HOD, Staff, and Principal, the system ensures accountability, balanced workload distribution, and real-time visibility of admission progress. Features such as lead categorization, performance tracking, verification mechanisms, and activity logs reduce manual effort and enhance decision-making. Future enhancements may include AI-based student interest prediction, automated calling or voice bot support, mobile application access, advanced analytics dashboards, and a student self-service portal. Additional improvements such as ERP integration, multi-campus support, automated notifications, enhanced security measures, cloud scalability, and multilingual support can further transform the system into a fully intelligent, automated, and scalable enrollment management platform, demonstrating how digital workflow systems can modernize and optimize institutional admission processes.

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