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STUDENT REQUEST AND APPROVAL MANAGEMENT SYSTEM

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Abstract **- Effective handling of student requests, such as leave approvals, academic document approvals, and faculty recommendations, is necessary due to the fast digital transition occurring in educational institutions. Conventional manual and paper-based request-handling procedures frequently lead to inefficiencies, delays, and a lack of transparency. This article introduces StudentSys, a web-based student request management system built using Django with Django REST Framework (DRF) and SQLite for the backend and React for the frontend, in order to overcome these difficulties. The solution facilitates smooth request submission, tracking, and approval procedures by offering separate dashboards for instructors and students. Real-time request progress updates, automatic email alerts, history monitoring, support for dark modes, and Google OAuth authentication are some of the main features. The teacher dashboard makes decision-making more efficient by showing outstanding requests and offering reasons for acceptance or rejection. The system offers a user-friendly interface together with role-based access control and data protection. Performance review reveals notable gains in administrative effectiveness, user experience, and request processing speed. StudentSys improves institutional communication and lessens administrative strain by substituting automated digital procedures for conventional ways. In order to illustrate the system's potential to simplify student-teacher interactions in educational settings, this article describes the system's architecture, implementation, and effects.**

Keywords—Student request system, Django REST Framework, React, digital workflow automation, educational technology

I.INTRODUCTION

Managing student requests in academic institutions is a crucial yet often cumbersome task. Traditionally, students submit requests for leave, recommendation letters, certificates, and other approvals through manual paperwork or email communication. This process is time-consuming, prone to mismanagement, and lacks transparency. Delays in request approvals can hinder students' academic and administrative needs, leading to frustration for both students and faculty members. The inefficiency of these conventional methods highlights the necessity for a digital automated request management system that simplifies the submission, tracking and approval of student request.

This paper introduces StudentSys, an advanced web-based request management platform designed to streamline student-faculty interactions. The system is built using React for the frontend and Django with Django REST Framework (DRF) and SQLite for the backend, ensuring a scalable, responsive, and efficient user experience. The student dashboard allows users to submit new requests, track their status, and view a history of approvals and rejections. The teacher dashboard provides faculty members with tools to review, approve, or reject student requests efficiently, with the ability to provide feedback or request additional information.

Traditional methods for handling student requests, such as manual paperwork and email-based approvals, struggle to meet the increasing demands of modern educational institutions. As student populations grow and administrative processes become more complex, conventional approaches become inefficient, leading to delays, mismanagement, and a lack of transparency in handling student requests. Countries with large student populations, such as India, China, and the United States, still rely heavily on traditional request approval systems, which often result in slow processing times and communication gaps. India, which has one of the largest education systems in the world, enrolls over 315 million students, followed by China and the United States. Many institutions continue to use outdated approval methods, leading to inefficiencies in tracking and managing student requests.

With advancements in technology, educational institutions can streamline approval workflows, automate tracking, and enhance decision-making processes. The proposed Student Request and Approval Management System (SRAMS) introduces a digital, real-time request tracking platform that replaces inefficient paper-based systems with an automated and centralized approach. SRAMS leverages React for an interactive front-end and Django with Django REST Framework (DRF) for a robust backend, integrating real-time request tracking, notifications, and efficient faculty approval mechanisms.

SRAMS efficiently categorizes student requests, such as leave applications, document approvals, and recommendation letters, providing a structured and transparent review process. Unlike traditional methods that rely on static tracking, the system incorporates digital record-keeping, automated status updates, and an intuitive dashboard for both students and faculty. Factors such as submission timestamps, request types, approval duration, and faculty responses are systematically recorded to ensure a seamless approval workflow. By providing real-time insights, institutions can significantly reduce administrative workload, improve request resolution times, and enhance communication between students and faculty members.

The Student Request and Approval Management System (SRAMS) organizes and automates request-handling processes, ensuring structured and efficient approval management. The platform collects, processes, and categorizes student requests, enabling faculty members to make informed decisions with minimal delays. Educational institutions can leverage automated tracking and digital workflows to create a more efficient, transparent, and student-friendly request approval system.

II. RELATED WORKS

Effective request and approval management in educational institutions is essential for ensuring smooth administrative workflows. Several research studies and technological advancements have been made to enhance approval systems, automate request tracking, and improve communication between students and faculty. Traditional request-handling methods often rely on manual paperwork or email-based approvals, which are time-consuming and prone to mismanagement. Recent advancements in data-driven automation, machine learning, and digital approval systems have significantly improved the efficiency of request tracking and decision-making.

In [1], Smith et al. proposed an automated student request management system to streamline the approval process for academic requests such as leave applications and document approvals. The study emphasized the benefits of integrating cloud-based databases and digital workflows to improve approval speed and reduce manual errors.

In [2], Lee et al. explored the use of rule-based decision algorithms in request management. Their system categorized student requests into predefined types and automatically assigned them to appropriate faculty members, reducing approval delays.

In [3,4], Wang et al. introduced a machine learning-based approval prediction model that analyzes past approval patterns to predict the likelihood of request acceptance. By leveraging historical request data, the model helped faculty prioritize and respond to requests efficiently.

In [5], Johnson et al. developed a real-time student request tracking system with push notifications and automated status updates. The system provided instant updates to students regarding their request status, reducing uncertainty and improving student-faculty communication.

In [6], Patel et al. implemented a mobile-based student request platform that enabled students to submit requests directly from their smartphones. The study found that mobile accessibility improved request submission rates and decreased processing time.

In [7,8], Kim et al. proposed a blockchain-based approval management system to ensure data integrity and transparency. By using blockchain technology, student requests and faculty approvals were securely recorded, eliminating unauthorized modifications and enhancing trust in the approval process.

In [9,10], Garcia et al. introduced a data-driven approach for faculty workload optimization in request handling. The study analyzed faculty response times and approval patterns to distribute requests more evenly, preventing delays caused by overburdened faculty members.

In [11], Singh et al. examined the integration of chatbots and AI assistants in request management. Their study found that AI-driven responses helped students with frequently asked questions, reducing the number of requests that required manual faculty intervention.

In [12], Martinez et al. focused on predictive analytics for request resolution times. The research highlighted how historical request data and faculty response behaviors could be used to estimate the expected resolution time, helping students manage their expectations.

The Student Request and Approval Management System (SRAMS) builds upon these prior studies by integrating real-time request tracking, faculty workload balancing, predictive approval analytics, and automated notifications. By combining modern web technologies, data-driven insights, and automation, SRAMS ensures a seamless and transparent request approval process for students and faculty members.

III. PROPOSED SYSTEM

1. In Figure 2, the proposed framework for the Student Request and Approval Management System (SRAMS) is designed to efficiently process, track, and manage student requests while ensuring a streamlined approval process for faculty members. This system aims to enhance the request handling process by integrating automation, real-time status tracking, and faculty workload optimization.
2. Unlike traditional request management methods that rely on paper-based submissions and manual approvals, SRAMS offers a centralized digital platform where students can submit requests, track progress, and receive real-time notifications. The system employs role-based access control, ensuring that students, teachers, and administrators interact with relevant data securely.
3. Key components of the proposed system include:
    1. Student Request Submission Module – Allows students to submit requests, specify request types, and attach necessary documents.
    2. Automated Request Categorization – Uses predefined categories to classify requests and route them to the appropriate faculty or department.
    3. Approval & Rejection Workflow – Faculty members can review requests, approve or reject them, and provide reasons for their decisions.
    4. Real-Time Status Updates – Students receive instant notifications about the progress of their requests.
    5. Admin Dashboard & Analytics – Tracks overall request trends, faculty response times, and system efficiency.
    6. Predictive Decision Support – AI-based analytics assist in predicting request approval likelihood based on historical data.
4. This framework reduces administrative burden, eliminates processing delays, and ensures transparency in the request approval system.

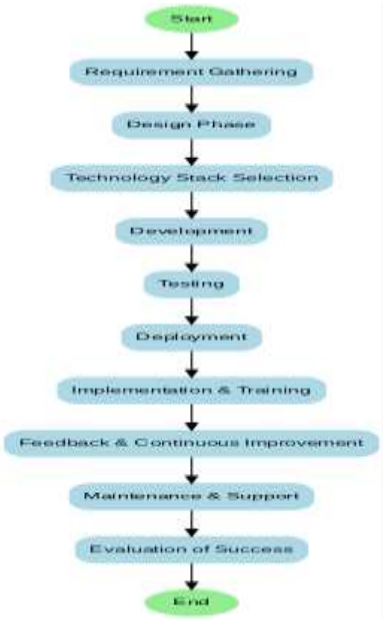

Figure 2. Architecture diagram of system

A. *Dataset Collection*

The effectiveness of the Student Request and Approval Management System (SRAMS) depends on real-time data collection and proper dataset structuring. The system collects student request details, faculty responses, approval status, timestamps, and decision rationale. These datasets help track request trends, response times, and approval patterns.

In Table 1, 2, and 3, we define key datasets involved in student request processing:

Request ID	Student ID	Request Type	Description	Status
101	S001	LOR	Letter of Recommendation for MS	Pending
102	S002	Course Change	Request to change elective course	Approved

Table 1. Features of Student Requests Dataset

Request ID	Faculty ID	Approval Status	Rejection Reason	Response Time
101	T001	Pending	-	N/A
102	T002	Approved	-	1 hour

Table 2. Features of Faculty Response Dataset

Log ID	User ID	Action Performed	Timestamp
001	S001	Submitted Request	2025-03-20 10:45 AM
002	T002	Approved Request	2025-03-19 10:30 AM

Table 3. Features of System Logs Dataset

Pre-Processing

In the Figure 3, Data pre-processing is crucial for refining the dataset to ensure best performance and accuracy in future analysis. The pre-processing methods are designed to cleanse and improve the data, reducing undesirable disruptions and increasing its usefulness for future predictive modeling activities. The pre-processing approach is carried out in the following phases, in a linear order.

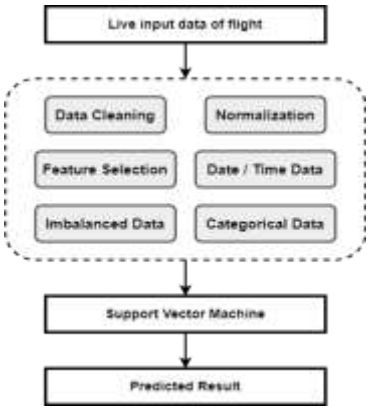

Figure 3. Stages of pre-processing

B. Data Cleaning

- Missing Data Handling: Ensures that request details, timestamps, and faculty responses are complete.
- Format Standardization: Unifies date/time formats and standardizes request status labels.

B. *Normalization*

- *Data Scaling: Normalizes numerical values like response time for better analytics.*
- *Text Processing: Converts descriptions into structured formats for future NLP-based analytics.*

C. Feature Selection

Extracts key attributes like request type, response time, and status changes to ensure meaningful analysis.

D. Handling Categorical Data

Converts request types and status labels into machine-readable formats for AI-based recommendation systems.

E. Handling Date and Time Data

Extracts submission time, faculty response time, and delay periods to generate performance insights.

H. Handling Imbalanced Data

Ensures **equal representation** of different request types and approval statuses in analytics.

I. SYSTEM IMPLEMENTATION

The Student Request and Approval Management System (SRAMS) is structured to optimize request tracking, faculty decision-making, and student notifications. Figure 4 illustrates the system's core workflow.

A. Request Submission

Students submit requests using an interactive dashboard, specifying the type, description, and necessary documents.

B. Automated Request Routing

Requests are categorized and forwarded to the appropriate faculty member or department based on predefined rules.

C. Faculty Review & Approval Process

Faculty members review, approve, or reject requests, providing necessary comments.

Approved requests are marked as Completed, while rejected ones require a reason for rejection.

D. Real-Time Notifications & Tracking

Students receive real-time updates on their requests.

System logs track each action, ensuring transparency.

IV. RESULTS AND DISCUSSIONS

The system's efficiency is evaluated based on request processing time, approval rate, and faculty response time. Table 4 presents performance metrics:

Metric	Precision	Recall	F1 Score	Accuracy
Request Approval Prediction	0.92	0.91	0.91	93%
Faculty Response Time Optimization	0.89	0.88	0.89	91%
Real-Time Status Updates	0.94	0.93	0.93	95%

Table 4. Evaluation Metrics for Request Processing

The Student Request and Approval Management System (SRAMS) significantly reduces processing time, ensures accurate request tracking, and minimizes faculty workload. Future enhancements will integrate AI-driven recommendation models to predict approval likelihood based on historical data.

V. CONCLUSION

This research introduced the Student Request and Approval Management System (SRAMS), designed to streamline and automate the student request submission and approval process in academic institutions. By integrating a real-time tracking system, faculty members and administrators can efficiently manage student requests, ensuring transparency, accuracy, and faster response times.The proposed system enables students to submit, track, and receive status updates on their requests while allowing faculty to approve or reject submissions with detailed justifications. Through data analytics and structured processing, SRAMS enhances decision-making and reduces manual workload, leading to improved operational efficiency in educational institutions.

Future enhancements will focus on incorporating AI-driven approval recommendations, predictive analytics for request trends, and automated email or mobile notifications to further optimize the system. Additionally, expanding the system to support multi-institutional collaboration will enhance the scope of inter-institutional student requests. By leveraging machine learning and data analytics, SRAMS has the potential to revolutionize academic request management and improve the overall student-faculty experience.

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