

College Insight: A Personalized College Selection System

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Abstract - Selecting a suitable higher education institution is a challenging decision for students due to fragmented, inconsistent, and incomplete information across different sources. College Insight is a centralized, community-driven web platform designed to help students make informed college selection decisions by providing reliable and comprehensive information about higher education institutions. The platform integrates verified institutional details such as NAAC grades, NBA accreditation, NIRF rankings, UGC recognition, AICTE approval, official website links, geographical locations, and historical admission cutoff information with student reviews and ratings across academics, placements, infrastructure, faculty, and campus life. It also provides college comparison and a rank prediction and recommendation module that analyses entrance examination ranks against previous cutoff trends. The frontend is developed using HTML, CSS, and JavaScript, while n8n workflows provide backend automation and Google Sheets is used for cloud-based data management. HTTP webhooks and JSON support communication between the web interface and automation workflows. By integrating institutional information, community feedback, historical cutoff analysis, comparison, and personalized recommendation, College Insight provides a centralized and scalable decision-support platform for students.

Key Words: College Selection, Higher Education, Student Reviews, Multi-Aspect Rating, College Comparison, Rank Prediction, Recommendation System, Decision Support.

1. INTRODUCTION

Choosing the right college is a major decision that can influence a student's academic experience, career opportunities, financial planning, and future professional direction. Students appearing for entrance examinations often need to combine information from institutional websites, ranking portals, admission sources, review platforms, maps, and informal discussions. This fragmented information makes it difficult to evaluate institutions consistently and to understand whether a particular college matches an individual student's entrance rank and expectations. College Insight is developed as a centralized, community-driven college selection and decision-support system. The platform brings institutional

information, student feedback, historical cutoff information, comparison, and rank-based recommendations into one web application. The project documentation identifies the need to make information easier to access while avoiding dependence on a single overall rating or a single information source.

The system presents institutional details such as NAAC grades, NBA accreditation, NIRF rankings, UGC recognition, AICTE approval, official website links, and location. Registered students can also contribute reviews across academics, placements, infrastructure, faculty, and campus life. A rank-based module analyses previous cutoff trends to identify colleges that may be suitable for a student's entered rank.

1.1 Motivation

The project is motivated by the practical difficulty students face when comparing colleges. Official websites can emphasize institutional information without presenting the complete student perspective, while general review websites may reduce a complex institution to one overall score. College Insight therefore separates important aspects of the college experience and combines them with formal institutional information and historical admission data.

1.2 Contributions

- Centralization of college information and official institutional references.
- Multi-aspect student review and rating covering academics, placements, infrastructure, faculty, and campus life.
- College comparison using common information categories.
- Rank-based college recommendation using historical cutoff information.
- Workflow-driven backend automation using n8n, HTTP webhooks, JSON, and Google Sheets.

2. PROBLEM STATEMENT

Selecting an appropriate higher education institution is difficult because reliable and comprehensive information is distributed across multiple sources. Students may

depend heavily on official college websites, which generally focus on institutional presentation, while review platforms may provide only a single overall rating. This makes it difficult to evaluate important areas such as academics, placements, infrastructure, faculty, and campus life separately.

The problem is also connected with admission suitability. A student may know an entrance examination rank but still lack a structured method for relating that rank to previous admission cutoff trends. Verified details such as accreditation, recognition, official links, location, and cutoff information can also be difficult to locate, especially for regional institutions. College Insight addresses this problem by combining these information categories in a single platform.

3. LITERATURE SURVEY

The project literature survey considers research on college choice, higher education information, student-generated reviews, multi-criteria decision making, and modern web engineering. These areas support the design of a platform that combines formal information, community feedback, multiple evaluation criteria, and a decoupled implementation architecture.

Table -1: Summary of selected literature relevant to College Insight

Author & Year	Domain / Focus	Key Contribution / Findings	Limitation
Perna (2006)	College Choice Models	Information quality is an important factor influencing college enrollment decisions.	Focused on traditional information sources.
Mampaey & Huisman (2015)	Higher Education Marketing	Official higher-education websites can present selectively reported institutional information.	Did not propose a complete alternative platform.
Felton et al. (2008)	RateMyProfessors Analysis	Student-generated reviews can provide useful academic feedback and insights.	Primarily focused on faculty evaluation.
Kassolas et al. (2014)	Student Decision-Making	Multi-criteria evaluation is important for informed higher-education decisions.	Did not provide the same integrated web framework.
Biørn-Hansen et al. (2020)	Modern Web Engineering	Decoupled web architectures can support efficient and scalable application	Focus was technical rather than higher-

Author & Year	Domain / Focus	Key Contribution / Findings	Limitation
		development.	education-specific.

3.1 Research Gap

- Lack of a single platform combining verified college information and student feedback.
- Conventional review systems often use a single overall rating.
- Admission-oriented rank prediction / recommendation is not integrated with the review and information layer.
- Students can encounter biased or selectively presented institutional information.
- Regional and less-publicized colleges can have limited structured information available.

4. OBJECTIVES

- Centralize college information into one web platform.
- Implement a multi-aspect rating engine.
- Provide college comparison features.
- Build a rank-based recommendation module using historical cutoff trends.
- Use a decoupled workflow architecture for maintainable backend processing.

5. PROPOSED METHODOLOGY

The proposed system follows a request-processing workflow in which the frontend interacts with n8n through HTTP webhooks. n8n validates and processes the request, retrieves relevant records from Google Sheets, and returns structured information to the frontend. When an entrance examination rank is supplied, the workflow uses historical cutoff information to identify potentially suitable colleges. Registered students can submit reviews, which are stored in the same cloud-based data layer.

The overall processing path can be represented as: User Interaction → Web Frontend → HTTP Webhook → n8n Workflow → Google Sheets → Processing / Recommendation → JSON Response → Web Interface.

This separation keeps the user interface lightweight while allowing backend automation to be modified independently.

5.1 System Architecture

The architecture contains the presentation layer, workflow automation layer, cloud data layer, and decision-support functions. The frontend is implemented using HTML, CSS,

and JavaScript. n8n provides the backend workflow layer. Google Sheets provides cloud-based data management. HTTP webhooks and JSON provide the communication mechanism. The project also uses Google Maps for geographical location access.

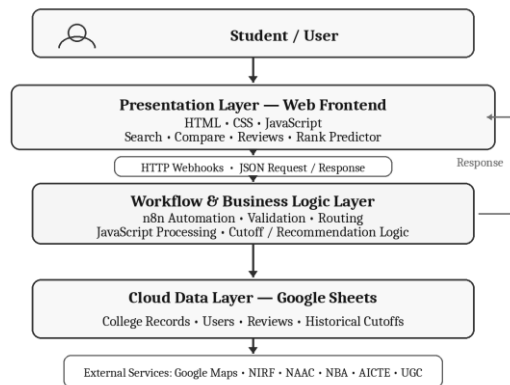


Fig -1: System Architecture of College Insight

The architecture shown in Fig -1 separates the system into presentation, integration, workflow/business-logic, cloud-data, and external-service layers. Students interact with the HTML, CSS, and JavaScript frontend for college search, comparison, reviews, and rank-based recommendations. Requests are exchanged through HTTP webhooks using JSON. n8n performs validation, routing, JavaScript processing, and recommendation logic, while Google Sheets stores college, user, review, and historical cutoff records. Google Maps and official institutional sources support location and verification functions.

5.2 Request and Response Processing

A request from the web application is received by the webhook endpoint. The Google Sheets node retrieves the relevant records. The conditional node determines the processing path, after which JavaScript can transform or prepare the response. The processed output is then returned to the frontend. This workflow supports the dynamic college-search and recommendation functions of the platform.

5.3 College Search Flow

- User opens the College Insight web application.
- User searches for a college or enters an entrance examination rank.
- Frontend sends the request to n8n using an HTTP webhook.
- n8n validates and processes the request.
- College records are retrieved from Google Sheets.
- The required information is transformed into a structured response.
- The frontend displays the result dynamically.

5.4 Rank Prediction and Recommendation

The rank prediction component accepts an entrance examination rank and compares the input against previous cutoff information stored in the project data. The purpose of this module is to identify colleges whose historical cutoff values indicate potential eligibility or suitability for the entered rank. The interface shown in the project output presents a rank input area and a button for finding eligible cutoffs.

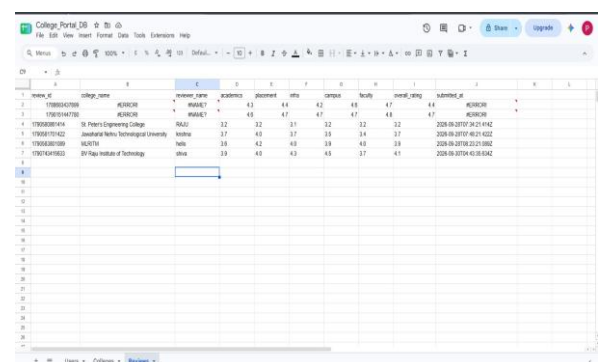
The supplied implementation material describes historical cutoff analysis rather than a machine-learning prediction model. Therefore, the system is described in this paper as a rank-based recommendation and cutoff analysis module. Quantitative prediction accuracy is not claimed because no benchmark dataset or measured accuracy result was supplied.

5.5 Multi-Aspect Rating System

College Insight does not depend solely on one overall rating. The project evaluates colleges across academics, placements, infrastructure, faculty, and campus life. This structure enables students to inspect different dimensions of the college experience and compare institutions using categories that are directly relevant to decision making.

5.6 User Reviews and Community Data

Registered users can submit reviews for colleges. The supplied Google Sheets screenshot shows a Reviews sheet containing fields including review_id, college_name, reviewer_name, academics, placement, infra, campus, faculty, overall_rating, and submitted_at. The visible records demonstrate that submitted reviews are being stored with separate aspect scores and a calculated or stored overall rating.



review_id	college_name	reviewer_name	academics	placement	infra	campus	faculty	overall_rating	submitted_at
1	SRM Institute of Science and Technology	ANURAG	4.5	4.5	4.5	4.5	4.5	4.5	2024-08-20T17:34:21+04:00
2	SRM Institute of Science and Technology	ANURAG	4.5	4.5	4.5	4.5	4.5	4.5	2024-08-20T17:34:21+04:00
3	SRM Institute of Science and Technology	ANURAG	4.5	4.5	4.5	4.5	4.5	4.5	2024-08-20T17:34:21+04:00
4	SRM Institute of Science and Technology	ANURAG	4.5	4.5	4.5	4.5	4.5	4.5	2024-08-20T17:34:21+04:00
5	SRM Institute of Science and Technology	ANURAG	4.5	4.5	4.5	4.5	4.5	4.5	2024-08-20T17:34:21+04:00
6	SRM Institute of Science and Technology	ANURAG	4.5	4.5	4.5	4.5	4.5	4.5	2024-08-20T17:34:21+04:00
7	SRM Institute of Science and Technology	ANURAG	4.5	4.5	4.5	4.5	4.5	4.5	2024-08-20T17:34:21+04:00

Fig -2: Google Sheets review data used by the College Insight platform

The review data provides a community-driven layer alongside formal institutional information. The project design therefore combines structured institutional data

with student-generated observations. During deployment, validation of review content and handling of erroneous records are important considerations.

5.7 Data Model

The documented data model separates institutional information, user information, and review information. College records support the display of accreditation, rankings, location, cutoff and website information. User records support authentication and registered access. Review records capture college identity, reviewer identity, five aspect scores, overall rating, and submission time.

6. IMPLEMENTATION ENVIRONMENT

College Insight is implemented as a lightweight web application. The frontend uses standard web technologies, while n8n is responsible for backend workflow automation. Google Sheets is used as a cloud-based data store. HTTP webhooks provide request connectivity, and JSON is used for structured communication. Google Maps supports location-related functionality. Development is carried out using VS Code, Git and GitHub, and the application can be accessed through modern browsers.

Table -2: Implementation environment of College Insight

Component	Technology Platform	Purpose Description
Frontend	HTML5, CSS3, JavaScript	Web interface, college search, display, comparison and interaction.
Backend Automation	n8n Workflows	Request validation, processing, data retrieval and response automation.
Data Management	Google Sheets	Cloud-based storage of college, review and related project data.
Communication	HTTP Webhooks, JSON	Request/response communication between frontend and n8n.
Maps	Google Maps	Geographical location access for colleges.
Development	VS Code, Git, GitHub	Source development and version management.

Component	Technology Platform	Purpose Description
Browser	Google Chrome, Microsoft Edge	Application access and functional testing.

6.1 Frontend Implementation

The frontend provides the main interaction surface for students. The project screenshots show a web interface containing institutional verification links, an entrance examination rank predictor, stream filters, college cards, cutoff information, ratings, website links, and location access. The interface is designed to present several information categories without requiring the user to manually combine data from separate sources.

6.2 Authentication and User Access

The supplied project code screenshot shows an authentication page implemented with HTML and JavaScript, with separate login and registration tabs. The interface collects an email address and password for authentication. User registration enables the platform to associate submitted reviews with registered users, supporting the community-driven review component.

6.3 Backend Code and Workflow Integration

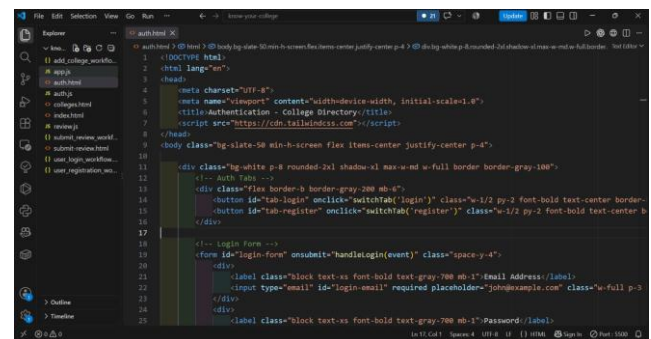


Fig -3: Project backend/frontend implementation in VS Code

The supplied code screenshot shows the project source structure, including HTML and JavaScript files for authentication, college display, application logic, reviews, and n8n workflow-related files. The visible authentication page uses Tailwind CSS through its CDN and JavaScript event handling for switching between login and registration forms. The implementation demonstrates the separation of presentation files and workflow integration artifacts used by the project.

7. SYSTEM FUNCTIONALITY

7.1 Institutional Information

The platform provides a dedicated institutional-information section containing references to official accreditation and regulatory sources. The supplied homepage/output screenshot shows links for NIRF ranks, NAAC grades, NBA status, the AICTE portal, and the UGC portal. This gives users direct access to institutional verification sources while browsing colleges.

7.2 College Cards and Comparison

The output interface displays college cards containing an institution name, estimated cutoff rank, rating, and separate scores for academics, placements, infrastructure, campus, and faculty. The cards also provide website and location actions. The common layout allows users to compare institutions using the same information categories.

7.3 Entrance Examination Rank Predictor

The rank predictor interface provides an input field for an entrance examination rank and a 'Find Eligible Cutoffs' action. This supports the rank-based recommendation workflow described in the methodology. The system uses historical cutoff information rather than claiming a trained predictive model.

7.4 Stream Filtering

The output interface includes stream filters such as All Streams, B.Tech, and Degree. Such filtering allows users to narrow the visible set of colleges according to the selected academic category. The project can therefore combine structured filtering with the rank and college information modules.

7.5 College Details and Location

College cards expose website and location actions. The project's technology list identifies Google Maps as the mapping component. This allows the platform to connect institutional selection with geographical context, which can be important when students consider accessibility and location.

8. IMPLEMENTATION WORKFLOW

The project workflow consists of requirement analysis, frontend development, backend automation, data integration, recommendation implementation, testing, and deployment. The workflow is iterative because frontend changes can affect webhook payloads and backend

responses, while changes to Google Sheets fields can affect the JavaScript transformation and display logic.

Table -3: Implementation stages of College Insight

Stage	Activity
Requirement Analysis	Identify student information needs, college fields, review categories and recommendation requirements.
UI Development	Build the college directory, authentication, rank predictor, cards and review interfaces.
Workflow Automation	Configure n8n webhook, Google Sheets, conditional processing, JavaScript and response nodes.
Data Integration	Design and maintain college, user and review records in Google Sheets.
Recommendation	Implement historical cutoff filtering and eligible-college output.
Integration Testing	Verify frontend requests, workflow responses, data storage and display.
Deployment	Publish the web application and validate access through supported browsers.

9. RESULTS AND DISCUSSION

The supplied project evidence demonstrates a working workflow, connected data layer, review records, and a user-facing college-selection interface. The system architecture in Fig -1 shows how the frontend, n8n workflow automation, Google Sheets data storage, and external services interact. The review-data image demonstrates stored community records, while the web output demonstrates college cards, rating categories, cutoff information, verification links, and a rank predictor.

9.1 Backend Workflow Result

The n8n workflow provides the processing path required by the application. The workflow starts at a webhook, retrieves rows from a Google Sheet, evaluates an If condition, processes the data using JavaScript, and returns a response. This is consistent with the architecture described in the project abstract and methodology.

9.2 Data Storage Result

The supplied Google Sheets screenshot shows a Reviews worksheet with actual entries. The sheet contains separate columns for academics, placement, infrastructure, campus, faculty and overall rating, together with college name, reviewer name, review identifier and submission timestamp. This demonstrates the intended structure for storing community feedback.

9.3 User Interface Result

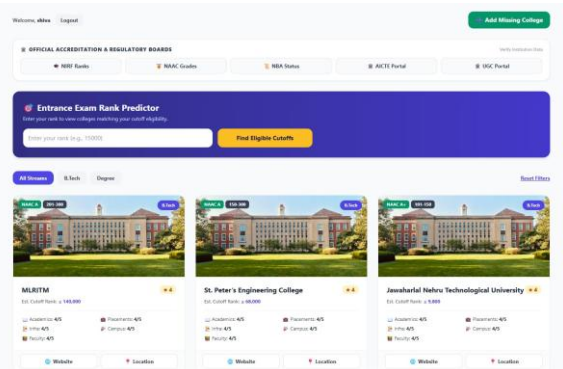


Fig -4: College Insight output showing rank predictor and college cards

Fig -4 shows the user-facing output after the project data is rendered. The interface includes institutional verification links, an entrance examination rank predictor, stream filters, college cards, estimated cutoff ranks, ratings, individual aspect scores, website links, and location actions. The visible layout demonstrates how the project's separate information sources are presented in a single interface.

9.4 Homepage / Main Interface

The interface shown in Fig -4 also represents the main visual interface of the College Insight system. It provides the starting point from which users can access institutional verification links, rank-based decision support, stream filters, college cards, ratings, websites, and location actions.

9.5 Review Data Result

The review records visible in the supplied Google Sheets image demonstrate that the community-rating component is capable of representing separate scores for multiple aspects. Example records contain ratings for academics, placement, infrastructure, campus and faculty, with an overall rating and submission timestamp. Some visible rows also contain error values in fields, indicating that data validation and cleanup remain important implementation considerations before large-scale use.

9.6 Functional Evaluation

Functional evaluation should verify each major user journey independently. Search functionality should return the correct college information. Rank input should return colleges whose historical cutoff values satisfy the implemented eligibility condition. Review submission should create a valid row in the Reviews sheet. College

cards should render the returned institutional information and aspect ratings. Authentication should distinguish the login and registration paths. Webhook failure or missing data should return an appropriate response rather than an incomplete interface.

Table -4: Functional evaluation areas based on supplied implementation evidence

Test Area	Expected Behaviour	Evidence / Status
n8n workflow	Webhook retrieves, processes and responds to data.	Workflow screenshot supplied.
Google Sheets	Review data is stored with aspect ratings and timestamps.	Reviews sheet screenshot supplied.
Rank predictor	Entered rank is processed against cutoff information.	Output screenshot supplied.
College display	College cards show cutoff, ratings, website and location.	Output screenshot supplied.
Authentication	Login and registration forms are available.	Source-code screenshot supplied.
Data validation	Invalid/missing data should be handled safely.	Requires continued testing; visible sheet errors show need for validation.

9.7 Discussion

The implementation demonstrates the integration of a conventional web frontend with an automation-oriented backend. The use of n8n makes the processing logic visible as a workflow and allows individual steps to be inspected. Google Sheets provides a simple cloud data layer that is easy to update during development. The user interface then converts this data into a student-oriented presentation of college information.

The multi-aspect review design also addresses an important limitation of single-score systems. A student can inspect different aspects instead of interpreting one number as a complete representation of a college. The rank predictor adds an admission-oriented function, allowing historical cutoff information to participate in the selection process.

10. SECURITY, RELIABILITY AND DATA QUALITY CONSIDERATIONS

Because College Insight handles user accounts and community-generated reviews, data integrity and access control are important. The project includes a login and registration interface and uses workflow endpoints for backend communication. Authentication and authorization should be enforced at the backend boundary rather than relying only on frontend controls. Webhook endpoints should also avoid exposing unnecessary data and should validate incoming payloads before processing them.

10.1 Review Integrity

Student reviews are an important source of community information but can also introduce inaccurate, duplicated, or malicious submissions. The visible review sheet includes records with normal numeric ratings as well as rows containing spreadsheet errors. This demonstrates the practical need for validation, required-field checks, numeric-range validation, duplicate detection, and controlled handling of malformed records.

10.2 Data Verification

Institutional information should be maintained against authoritative sources such as the official NIRF, NAAC, NBA, AICTE and UGC references presented by the interface. The system can provide links to these sources, but the accuracy of stored college records remains dependent on the data-maintenance process. Future iterations should define update schedules and verification procedures for rankings, accreditation, approvals and cutoff data.

10.3 Reliability of Recommendation

The rank recommendation component is based on historical cutoff information. Historical cutoffs can change across admission cycles, categories, branches, seat availability, examination rules, and institutional changes. Therefore, the output should be treated as historical-data-based guidance rather than a guaranteed admission result. The system should clearly display the year and context of cutoff records where available.

10.4 Scalability

The n8n and Google Sheets architecture is appropriate for a lightweight project and provides a relatively simple development model. However, large-scale public use may create limitations related to spreadsheet size, concurrent requests, API quotas, workflow execution volume, and data consistency. A future production-scale architecture could migrate the data layer to a dedicated database while preserving the same webhook-oriented service boundary.

10.5 Limitations of the Present Evaluation

- No measured recommendation accuracy was supplied.
- No load-testing or concurrent-user benchmark was supplied.
- No formal user-study or usability score was supplied.
- The current evidence is based on implementation screenshots and the project documentation.
- Visible spreadsheet errors indicate that data validation requires additional attention.

11. EXPECTED IMPACT

College Insight is intended to reduce the time and effort required to collect and compare college information. By placing institutional verification links, historical cutoff information, student ratings, college comparison, and rank-based recommendations in one interface, the platform can provide a more structured decision-making experience. The system is particularly oriented toward students who need a practical way to narrow down institutions using both formal information and community feedback.

12. FUTURE SCOPE

Future development can extend College Insight in several directions while retaining the current workflow architecture. A larger and systematically verified college dataset can improve coverage. A dedicated database can replace or supplement Google Sheets when data volume and concurrent access increase. The recommendation component can be evaluated with historical admission datasets and, if appropriate, extended to a formal predictive model.

The review system can be strengthened with moderation, duplicate detection, abuse reporting, verified-student mechanisms, and review history. College comparison can be expanded with branch-level cutoffs, fees, placement statistics, hostel information, accreditation history, and location-based filters where reliable data is available. Analytics can also be introduced to measure which information students use most when comparing institutions.

Further work can evaluate the application through controlled usability testing, response-time measurement, workflow reliability testing, security testing, and larger-scale deployment trials. Such evaluation would provide quantitative evidence for claims about usability, performance, reliability, and scalability that cannot be established from the current project screenshots alone.

13. CONCLUSION

College Insight is a centralized, community-driven college selection and decision-support system that integrates institutional information, student reviews, multi-aspect ratings, historical cutoff analysis, comparison, and rank-based recommendation. The implementation combines HTML, CSS and JavaScript on the frontend with n8n workflow automation, Google Sheets data management, HTTP webhooks and JSON communication. The supplied implementation evidence shows the backend workflow, review data storage, and user-facing college-selection interface working as interconnected components.

The platform addresses the fragmentation of college information by presenting multiple categories of evidence in one place. Its multi-aspect rating model avoids reducing the student experience to a single score, while the historical cutoff module adds an admission-oriented decision-support function. The current implementation should be further evaluated for security, data quality, scalability, recommendation accuracy, and usability before making quantitative performance claims. Within the documented project scope, College Insight provides a practical foundation for a centralized and data-driven college selection platform.

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