ARTIFICIAL INTELLIGENCE (AI)

Nexora – Next Gen Navigator: An AI-Powered Personalized Educational and Career Guidance Platform

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Abstract

Students frequently make educational and career decisions while facing fragmented information about academic pathways, occupations, courses, scholarships, certifications and entry-level opportunities. Generic guidance may not adequately reflect an individual learner's academic background, current skills, interests, goals, financial constraints or preferred location. This paper presents Nexora – Next Gen Navigator, a proposed AI-powered web application intended to provide personalized educational and career guidance through a unified platform. The system is designed to collect a student profile, interpret academic and skill-related information, and generate context-aware suggestions for career paths, colleges, courses, scholarships, certifications, internships and skill-development opportunities. Its planned capabilities include skill-gap analysis, personalized learning and career roadmaps, resume-building assistance and progress tracking. The proposed implementation uses React.js for the frontend, Node.js and Express.js for backend services, MongoDB for persistent data storage, and an external generative AI service such as the OpenAI API or Google Gemini API for conversational and recommendation support. The paper describes the problem context, related research, proposed system, architecture, recommendation workflow, implementation plan and a functional evaluation strategy. As the application has not yet been deployed and evaluated, the paper does not claim measured recommendation accuracy, improved placement rates or validated user benefits. Instead, it defines test scenarios and evaluation criteria that can be applied when the application is implemented and tested. Nexora is intended to support informed decision-making while keeping final educational and career choices with the student.

Keywords: AI-based career guidance; educational recommendation; personalized learning; recommender systems; skill-gap analysis; career roadmap; generative AI; student support system

1 Introduction

Education and career decisions are among the most consequential choices made by students. These decisions influence the subjects they pursue, the skills they develop, the institutions they consider and the opportunities for which they prepare. However, students often encounter information distributed across institutional websites, course catalogues, scholarship portals, job platforms, professional networks and informal advice. The information may be difficult to compare, may use unfamiliar terminology, and may not explain how a particular opportunity relates to a student's present capabilities or long-term goals.

The challenge is not simply a shortage of information. It is the difficulty of converting available information into a coherent and realistic personal plan. A student may know that a career such as data analyst, software developer, designer or cybersecurity analyst exists, yet may not understand the

prerequisites, entry-level skills, relevant courses, portfolio expectations or progression routes associated with that career. Similarly, a student may be unaware of scholarships, certifications or internships that match their academic stage, budget and preferred location.

Traditional guidance services, including counselling and faculty mentoring, remain valuable because they provide human judgement and contextual understanding. Nevertheless, access to individual guidance can be limited by counsellor availability, student volume and the time required to review each student's profile. Online resources increase access to information, but students must often search across several independent services and determine relevance themselves. A personalized digital guidance platform can help organize this process by connecting student attributes with educational and career information.

Nexora – Next Gen Navigator is proposed as an AI-powered web application that accepts information such as academic background, skills, interests, career goals, budget and preferred location. Based on these inputs, it aims to present suitable career directions and related educational options, identify possible skill gaps, and organize suggested actions into a roadmap. The system also proposes resume-building support and progress tracking so that guidance can extend beyond a one-time recommendation.

The role of AI in Nexora is to assist with interpretation, conversational interaction and the generation of understandable explanations. Recommendations should be grounded in maintained information sources wherever possible, and generated text should be treated as guidance rather than as verified institutional or employment information. The system is therefore designed as a decision-support tool, not as an authority that determines a student's future.

2 Problem statement

Students often struggle to make informed decisions about their education and careers due to a lack of personalized guidance, awareness of available opportunities, and understanding of the skills required for their desired career paths. Relevant information is fragmented across multiple platforms and is not always presented in a form that reflects an individual student's academic background, existing skills, interests, career goals, budget and preferred location.

This creates several related difficulties. First, students may select courses or career paths without a clear understanding of their prerequisites and long-term relevance. Second, they may overlook scholarships, certifications, internships and other opportunities because eligibility information is dispersed across separate sources. Third, students may not know which skills they need to acquire or how to sequence learning activities to become better prepared for a chosen role. Finally, the absence of continuous progress tracking can make it difficult to translate broad career goals into achievable milestones.

The problem addressed in this work can be stated as follows: given a student profile P consisting of academic background A, skills K, interests I, career goals G, budget B and preferred location L, generate relevant and explainable educational and career guidance R, including career suggestions, college and course options, scholarships, certifications, internships, skill gaps and a personalized roadmap. The system should present recommendations with understandable reasons, communicate uncertainty and source limitations, and allow the student to review and update the profile over time.

The intended solution must be accessible through a web interface, support secure handling of personal profile data, and provide a structured workflow for turning recommendations into trackable

actions. It should not imply guaranteed admission, scholarship eligibility, internship selection or employment outcomes.

3 Objectives

The objectives of Nexora – Next Gen Navigator are as follows:

- To design a personalized student-profile model that captures academic background, skills, interests, career goals, budget and preferred location.
- To provide AI-assisted career path suggestions and explain how each suggested path relates to the student's profile.
- To recommend relevant colleges, courses, scholarships, certifications and internship or skill-development opportunities, subject to the availability and freshness of source information.
- To identify differences between a student's current skills and the skills commonly associated with a selected career goal.
- To generate a sequenced learning and career roadmap containing suggested activities, milestones and progress indicators.
- To provide resume-building assistance using student-approved education, skills and project information.
- To support progress tracking so that students can review completed activities and revise their goals or plans.
- To implement the proposed platform using React.js, Node.js, Express.js, MongoDB and an external AI API, while applying suitable validation, privacy and security practices.
- To define functional test cases and an evaluation framework without claiming outcomes that have not been measured.

4 Literature review

Career guidance research provides a theoretical basis for understanding how personal characteristics, learning experiences and environmental conditions influence career development. Lent, Brown and Hackett's social cognitive career theory explains the roles of self-efficacy beliefs, outcome expectations and personal goals in academic and career interests and choices [1]. This perspective is relevant to Nexora because a useful guidance system should consider more than a student's marks or stated job preference; it should also help the learner understand capabilities, goals and perceived barriers.

Holland's theory of vocational personalities and work environments proposes six broad categories: Realistic, Investigative, Artistic, Social, Enterprising and Conventional [2]. Interest-based frameworks can support career exploration by helping students reflect on the kinds of activities and environments they prefer. Such frameworks should not be used as deterministic labels. In Nexora, interest information is intended to be one input among several, alongside skills, academic preparation and the student's own goals.

Career construction theory emphasizes the way individuals build career meaning through life themes, adaptability and personal narratives [3]. This highlights a limitation of purely static recommendation systems: student aspirations and circumstances may change. A platform that allows

profile revision and roadmap updates can better support career exploration as an ongoing process rather than a one-time matching exercise.

Recommender systems provide methods for filtering and ranking items according to user preferences, item characteristics and interaction data. Ricci, Rokach and Shapira describe major recommendation approaches, including content-based, collaborative and hybrid methods [4]. Content-based recommendation is relevant where a student's profile can be matched to explicit attributes of careers, courses or opportunities. Collaborative methods may become useful if sufficient consented interaction data is available, although they raise privacy and cold-start considerations. Nexora's initial design can use profile-to-item matching and curated metadata, with AI-generated explanations layered on top.

Research on recommender systems in technology-enhanced learning explores how recommendation methods can support learning resources, activities and learner pathways [5]. Educational recommendations differ from ordinary product recommendations because relevance depends on prerequisites, learning objectives, academic stage, learner context and progression. A course recommendation should therefore be checked against eligibility and prerequisite information rather than selected solely because its description resembles a student's interests.

The OECD has discussed the importance of career guidance in helping individuals navigate education and work transitions, including the need for accessible information and support across changing labour markets [6]. This reinforces the value of connecting educational choices with occupational information and skill development. However, labour-market information changes over time, and any platform that uses it must identify the source and date of the information.

Generative AI introduces conversational interfaces that can summarize information, explain concepts and help users explore alternatives. UNESCO's guidance on generative AI in education and research highlights the need for a human-centred approach, attention to privacy, validation and appropriate oversight [7]. For Nexora, a language model can help interpret a student's question and produce readable explanations, but it should not be treated as the authoritative source for admissions criteria, scholarship deadlines, fees or job openings. Those details require retrieval from trusted, current sources and clear indication of their provenance.

The literature supports a combined design: career-development concepts to frame student exploration, recommender-system methods to connect profiles with opportunities, and carefully governed generative AI to support interaction and explanation. Nexora aims to bring these elements together in a single student-facing workflow. Its contribution is a proposed integrated platform design; empirical claims about recommendation quality or educational impact require subsequent evaluation.

5 Proposed system

Nexora is proposed as a web-based personalized guidance platform. The student begins by creating or updating a profile containing academic details, skills, interests, goals, budget range and preferred location. The application validates the submitted information and converts it into a structured profile that can be used by recommendation services.

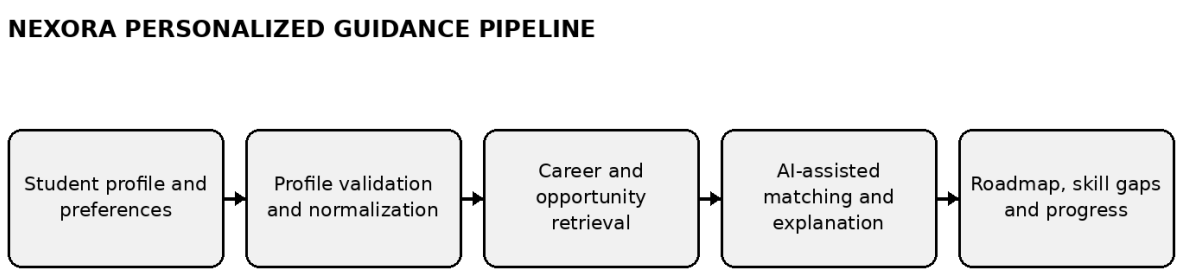


Figure 1. Conceptual processing pipeline of Nexora, from student profile to personalized guidance.

The recommendation workflow combines profile matching, opportunity retrieval and AI-assisted explanation. Career and course information can be represented using structured attributes such as required skills, qualification level, subject area, location, cost range and eligibility conditions. A matching component compares these attributes with the student's profile and identifies relevant options. The AI integration layer can then explain why an option may be relevant, summarize prerequisites and help the student ask follow-up questions.

The proposed system includes the following functional modules:

- Student Profile Management: records academic background, skills, interests, goals, budget and preferred location, with facilities to edit or update the information.
- AI Career Guidance: supports conversational exploration of career choices and generates profile-aware suggestions with explanations and caveats.
- Career Path Recommendations: presents possible career directions and describes typical responsibilities, entry requirements and progression routes.
- College and Course Recommendations: helps compare institutions and courses using available details such as subject relevance, location, eligibility and cost. Official sources must be checked before decisions are made.
- Scholarship and Certification Suggestions: surfaces opportunities that may match the student's academic stage and profile, while requiring verification of deadlines and eligibility from the issuing organization.
- Internship and Skill Development Opportunities: organizes relevant learning and early-career opportunities by domain, skill and location when reliable listings are available.
- Skill Gap Analysis: compares the student's declared skills with a target role's skill requirements and identifies areas for further learning.
- Personalized Roadmap: arranges suggested courses, projects, certifications and practice activities into an ordered plan with milestones.
- Resume Assistance: helps structure and improve a resume using information supplied and approved by the student; it must not invent qualifications or experience.
- Progress Tracking: records student-selected goals and completed activities and displays progress against the roadmap.

The system is intended to present recommendations as options for exploration. A student should be able to inspect the explanation, compare alternatives, dismiss unsuitable suggestions and update the

profile. Where information is unavailable or uncertain, the interface should state that limitation rather than fabricate details.

6 System architecture

Nexora follows a layered web-application architecture. The frontend manages user interaction, the backend coordinates application services, the AI integration layer communicates with the selected language-model provider, and MongoDB stores profile and application data. The architecture separates user-interface concerns from business logic and external AI services so that each component can be maintained independently.

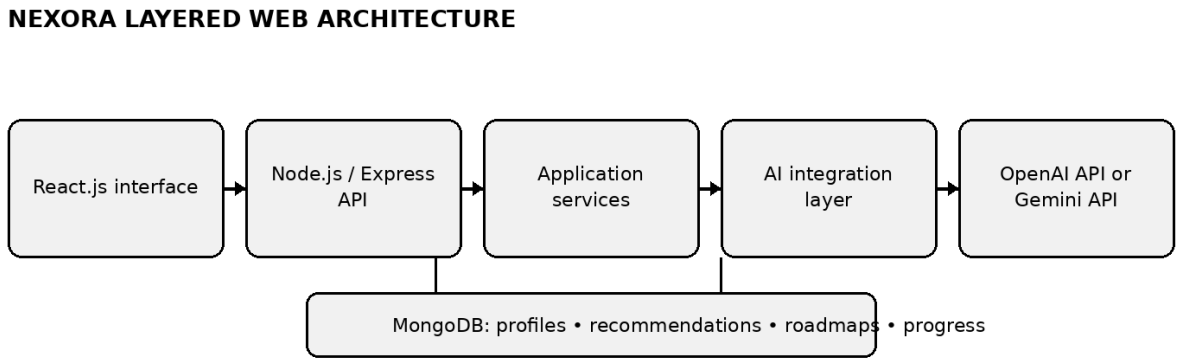


Figure 2. Proposed layered architecture of Nexora – Next Gen Navigator.

6.1 User interface layer

The user interface is developed using React.js. It is intended to provide registration and login screens, profile forms, a student dashboard, recommendation views, roadmap pages, resume assistance and progress visualizations. Reusable components can maintain consistent presentation across the application. Client-side validation may provide immediate feedback, while all important validation must also be performed on the server.

6.2 Backend application layer

The backend uses Node.js with Express.js to expose application programming interfaces (APIs). It handles authentication, profile updates, recommendation requests, roadmap operations, resume-related data and progress records. Middleware can be used for request validation, authorization, error handling and rate limiting. The backend is responsible for protecting API credentials and communicating with external AI services; secret keys must not be embedded in the React client.

6.3 Recommendation and AI integration layer

This layer coordinates profile interpretation, retrieval of relevant career and educational information, matching and AI-assisted response generation. The design is provider-agnostic and may integrate the OpenAI API or Google Gemini API, depending on the final implementation choice. Structured inputs and constrained prompts should be used to keep outputs aligned with the requested task. Factual opportunity details should be obtained from maintained data sources or official links rather than relying solely on model-generated memory.

6.4 MongoDB data layer

MongoDB is proposed for storing student profiles, skills, interests, goals, saved recommendations, roadmap milestones and progress records. Collections may be organized around users, profiles, opportunity records, recommendations and learning plans. Access should be restricted according to the authenticated user, and sensitive information should be minimized, protected in transit and retained only as required.

6.5 External information sources

College, course, scholarship, certification and internship information may be obtained from official institutional or provider sources. The design should preserve source names, URLs and last-checked dates where possible. If an opportunity catalogue is manually curated for an initial prototype, its coverage and update frequency must be documented. The current project description does not specify a completed external data integration, so this component is treated as a proposed capability.

7 Methodology

The methodology describes how Nexora transforms a student's profile into personalized guidance. Let the student profile be represented as:

$$P = \{A,\ K,\ I,\ G,\ B,\ L\} \tag{1}$$

where A denotes academic background, K denotes current skills, I denotes interests, G denotes career goals, B denotes budget constraints and L denotes preferred location. The system produces a recommendation set R:

$$R = \{C,\ E,\ O,\ D,\ M,\ V\} \tag{2}$$

where C represents career suggestions, E represents education options, O represents other opportunities, D represents identified skill gaps, M represents the personalized roadmap and V represents progress information. These expressions define the conceptual data flow; they are not a claim that a particular trained model or scoring formula has already been implemented.

7.1 Student profile collection and validation

The student provides profile attributes through guided forms. Required fields are checked for completeness and values are normalized into consistent categories where appropriate. The system should allow a student to skip optional fields and should avoid requesting sensitive information that is not necessary for the guidance task. Inconsistent or incomplete profiles should result in a request for clarification or recommendations with an explicit limitation.

7.2 Career and opportunity representation

Career paths and opportunities are represented using structured metadata. A career record may contain a title, domain, typical tasks, required skills, qualification expectations and related learning resources. A course or scholarship record may include provider, eligibility, location, cost or funding details, deadline and official source. Records should be updated periodically and should retain provenance so that students can verify important facts.

7.3 Profile-to-item matching

A first-stage matching process can compare student attributes with metadata of candidate careers and opportunities. A conceptual relevance score may be expressed as:

$$Score(P,\ x) = w_A M_A + w_K M_K + w_I M_I + w_G M_G + w_B M_B + w_L M_L \quad (3)$$

Here x is a candidate career or opportunity, M terms denote normalized match values for academic fit, skill fit, interest fit, goal fit, budget fit and location fit, and w terms denote configurable weights. This is a conceptual formulation for a possible ranking component, not a measured or finalized scoring model. The weights require design decisions and evaluation with representative profiles. Mandatory eligibility or maximum-budget conditions may be treated as filters rather than soft preferences.

7.4 AI-assisted explanation and guidance

After candidate items have been retrieved and matched, the AI service can generate a readable explanation of the recommendations, answer follow-up questions and help the student compare alternatives. The prompt should include only the profile information needed for the request and the retrieved facts relevant to the answer. The service should not invent admissions rules, scholarship eligibility, fees, deadlines, placement guarantees or employment statistics. The application should preserve links to source information and encourage verification for high-impact decisions.

7.5 Skill-gap analysis and roadmap generation

For a selected career goal, the system compares the student's current skills with a defined target-skill profile. The difference can be represented as a set of missing or developing skills. A roadmap then groups learning actions into stages, for example foundational learning, guided practice, project development, certification preparation and internship readiness. The sequence should account for prerequisites, available time and budget where those data are provided. Roadmap suggestions are advisory and should be editable by the student.

7.6 Resume assistance and progress tracking

Resume assistance uses student-confirmed education, skills, projects and achievements to organize a resume draft. The system should request confirmation before including generated descriptions and must not create false experience, grades or certifications. Progress tracking records milestones that the student marks as started or completed. Updated progress can be used to refresh the roadmap and recommendations, subject to the student's control over stored data.

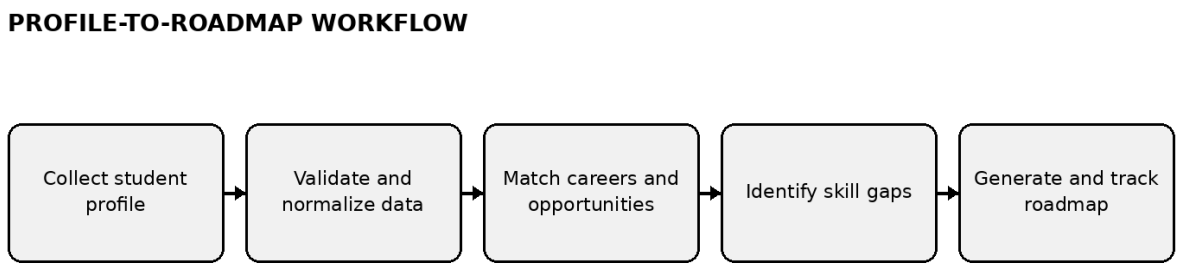


Figure 3. Proposed workflow for profile processing, recommendation and roadmap feedback.

8 Personalized recommendation algorithm

Algorithm 1 presents the proposed high-level workflow. It describes the sequence of operations and does not imply that the AI provider, data catalogue or ranking weights have already been finalized.

Algorithm 1: Nexora personalized guidance workflow

Input: Student profile $P = \{A, K, I, G, B, L\}$

Output: Career suggestions, education and opportunity options, skill gaps, roadmap and explanations

1. Receive the student profile P from the authenticated user.
2. Validate required fields and normalize profile attributes.
3. If essential information is missing, request clarification or mark the profile as incomplete.
4. Retrieve candidate career, course and opportunity records from available information sources.
5. Apply eligibility, location and budget constraints where reliable metadata is available.
6. Compare candidate attributes with academic background, skills, interests and goals.
7. Rank suitable candidates using the configured matching method.
8. Identify skill requirements not present in the student's current skill profile.
9. Construct a staged roadmap from relevant learning resources and activities.
10. Send selected profile context and retrieved facts to the AI service for explanation.
11. Validate the response structure and display source links and uncertainty notices.
12. Allow the student to save, reject or revise recommendations and roadmap milestones.
13. Store permitted profile, recommendation and progress updates in MongoDB.
14. Return the personalized guidance to the user.

The algorithm depends on the quality of the profile data and the information catalogue. A language model may produce fluent but inaccurate statements; therefore, generated explanations should be constrained by retrieved information and checked for required fields before display. The system should provide a safe fallback when the external AI service is unavailable, such as showing stored matching results with a notice that conversational explanation is temporarily unavailable.

9 Implementation

The proposed implementation uses a JavaScript-based web stack supported by a document-oriented database and an external AI API. The exact deployment configuration and implementation status were not included in the project information supplied for this paper; the following describes planned component responsibilities rather than asserting that every feature is already deployed.

9.1 Backend

Node.js and Express.js define REST-style API endpoints for account operations, student profile management, recommendation requests, roadmap updates, resume data and progress tracking. Server-side modules should separate authentication, validation, profile services, recommendation orchestration, AI-provider communication and database access. Environment variables should be used for database connection strings and AI API credentials. Password hashing, authorization checks and request-rate controls should be included before public deployment.

9.2 Frontend

React.js provides the component-based frontend. The planned interface includes a profile setup flow, dashboard, career recommendation cards, course and opportunity lists, skill-gap view, roadmap timeline, resume editor and progress summary. The interface should be responsive and accessible, with clear labels, keyboard navigation and understandable error messages. Loading and failure states should be shown when recommendations require an external API call.

9.3 Data persistence

MongoDB stores user and application records. A possible data model includes Users, StudentProfiles, CareerCatalog, OpportunityCatalog, Recommendations, Roadmaps and Progress collections. Each record should include ownership or access-control information where applicable. Indexes may be defined for user identifiers, career domains, location and opportunity deadlines, depending on query patterns. Data retention, deletion and backup policies should be established before handling real student information.

9.4 AI API integration

The application may integrate either the OpenAI API or Google Gemini API. The final provider should be selected based on availability, cost, latency, privacy terms, model capabilities and institutional requirements. The backend should call the provider through a server-side integration module and should not expose API keys to the browser. Prompts should request structured outputs where practical, and responses should be checked before being stored or shown. Personal data sent to an external provider should be minimized and handled in accordance with applicable provider terms and the project's privacy policy.

9.5 Version control and deployment

Git can be used for source-code version control and collaborative development. The React frontend and Express backend may be deployed to suitable cloud hosting services, while MongoDB may be hosted through a managed database service or an institutionally approved deployment. A production deployment should use HTTPS, secure configuration, logging that avoids unnecessary personal data, backups and monitoring. No specific hosting provider or completed deployment is asserted in this paper.

10 Experimental setup and test cases

A functional evaluation should verify whether Nexora processes profile inputs correctly, returns structurally valid guidance, respects stated constraints and handles errors safely. The project information supplied for this paper does not include executed test logs, a participant study, benchmark dataset or measured performance values. Accordingly, the cases below are proposed test scenarios for future execution and are not reported experimental results.

Table 1. Proposed functional test cases for Nexora.

ID	Test Scenario	Input / Condition	Expected Behaviour
T1	Complete profile	Academic details, skills, interests, goals, budget and location supplied	Profile is validated and saved for the authenticated user.

ID	Test Scenario	Input / Condition	Expected Behaviour
T2	Incomplete profile	Required academic or goal information omitted	System requests missing information or labels profile incomplete.
T3	Career suggestions	Valid profile with stated career interest	Relevant career options and profile-linked explanations are displayed.
T4	Budget constraint	Student specifies a limited budget	Options outside budget are filtered or clearly identified.
T5	Location preference	Student selects a preferred region	Location-relevant options are prioritized when source data supports it.
T6	Skill-gap analysis	Selected career has a defined target-skill profile	Missing or developing skills are identified.
T7	Roadmap creation	Student selects a career goal	A staged, editable roadmap is generated from available resources.
T8	AI service failure	External AI API returns an error or times out	Application displays an error or fallback without losing saved data.
T9	Resume assistance	Student supplies education, skills and project details	Draft uses supplied facts and does not invent credentials.
T10	Progress update	Student marks a roadmap milestone complete	Progress record is updated and reflected in the dashboard.
T11	Authorization	User attempts to access another user's profile	Access is denied by server-side authorization checks.
T12	Source verification	Opportunity record has missing or expired source details	System flags unavailable or stale information.

Testing should include unit tests for profile validation and matching functions, API tests for backend endpoints, integration tests for MongoDB and AI-provider communication, and end-to-end tests for complete student workflows. Security testing should examine authentication, authorization, input handling, secret management and exposure of personal information. Usability evaluation with student participants may be conducted after obtaining appropriate consent and defining an evaluation protocol.

Table 2. Suggested evaluation dimensions and measures.

Evaluation Dimension	Possible Measure	Purpose
Functional correctness	Pass/fail result for each defined test case	Checks whether required workflows behave as specified.
Recommendation relevance	Expert or user rating against a documented rubric	Assesses perceived fit; requires a defined sample and protocol.
Explanation quality	Completeness, clarity and factual-grounding review	Checks whether explanations are understandable and supported.
Latency	Response time under stated test conditions	Measures user-perceived responsiveness.
Usability	Task completion, error rate and questionnaire scores	Assesses ease of use after user testing.
Privacy and security	Results of access-control and security tests	Checks protection of student data.

11 Results and discussion

No empirical results are reported in this paper because the application has not yet been tested with users. The test cases in Table 1 define expected behaviour only. They should not be interpreted as evidence that the corresponding tests have passed.

The proposed design provides a unified workflow for student profile management, career exploration, opportunity discovery, skill-gap analysis, roadmap preparation, resume assistance and progress tracking. Its main design advantage is the connection between a student's current profile and suggested next steps. Rather than presenting an isolated list of careers, the platform is intended to explain how an option relates to the student's interests and skills and what learning activities may help the student explore it.

The usefulness of such a workflow will depend on several factors. Profile completeness affects the relevance of matching. The coverage and freshness of career and opportunity data affect factual quality. The matching strategy affects which alternatives are prioritized, while the AI service affects the clarity and consistency of generated explanations. These factors must be evaluated separately; fluent AI output alone does not establish recommendation correctness.

A future evaluation should compare Nexora's suggestions with a documented reference set prepared by qualified career or academic advisors, and should include student feedback on relevance, clarity and usefulness. Any reported accuracy, satisfaction or time-saving metric must specify its dataset, sample size, measurement method and limitations. Until such evaluation is completed, Nexora should be described as a proposed guidance platform and not as a validated predictor of academic or employment success.

12 Advantages

- Personalized guidance: considers multiple student attributes rather than relying on a single academic score or generic career list.
- Integrated discovery: brings career exploration, education options, scholarships, certifications and early-career opportunities into one planned workflow.
- Skill awareness: connects a selected career direction with the skills a student may need to develop.
- Action-oriented roadmap: converts broad goals into staged learning activities and milestones.
- Conversational assistance: AI integration can help students ask follow-up questions and understand recommendation explanations.
- Resume support: helps organize student-provided education, skills and project information into a structured draft.
- Progress visibility: allows students to monitor selected milestones and revise plans as interests or circumstances change.
- Extensible architecture: modular frontend, backend, database and AI integration components can be updated independently.

13 Limitations

- Recommendation quality depends on the completeness and accuracy of student profiles and the quality of career and opportunity information available.

- Generative AI may produce incorrect, outdated or unsupported statements; generated content must be constrained, checked and accompanied by source information where factual claims are made.
- Career paths and labour-market requirements vary by region and change over time, requiring ongoing data maintenance.
- Some institutions and scholarship providers may not expose structured or current information, limiting automated comparison and eligibility checks.
- An initial profile-matching approach may not capture complex personal circumstances or the nuance of human career counselling.
- AI API availability, pricing, latency and provider policies may affect service continuity and operating cost.
- Personal academic and career profiles require appropriate privacy, security, consent, access control and data-retention safeguards.
- The system cannot guarantee admission, scholarship awards, internship selection, employment or a particular career outcome.
- No measured recommendation accuracy, usability result or impact on student outcomes is claimed in the present paper.

14 Future scope

Several extensions may improve Nexora beyond the proposed initial scope. These are identified as future work and should not be understood as completed capabilities.

- Integration with verified and regularly updated institutional, scholarship, certification and internship data sources, including source dates and eligibility details.
- Hybrid recommendation methods that combine profile-based matching, expert-curated rules and, where sufficient consented data exists, collaborative signals.
- Explainable recommendation views that show the profile factors and source attributes contributing to each suggestion.
- Multilingual conversational guidance to improve accessibility for students with different language preferences.
- Integration with learning-management systems and course platforms to retrieve completion status and recommend suitable next learning activities.
- Advanced roadmap adaptation based on student progress, available time, changing goals and updated skill assessments.
- Validated skill assessments and portfolio analysis to complement self-reported skills.
- Accessibility improvements and mobile-first interfaces for students using a wider range of devices.
- Longitudinal user studies to evaluate whether the platform improves awareness, planning confidence and the quality of students' next-step decisions.
- Privacy-preserving analytics, transparent consent controls and governance processes for high-impact educational guidance.

15 Conclusion

This paper presented Nexora – Next Gen Navigator, a proposed AI-powered web application for personalized educational and career guidance. The system addresses the difficulty students face when connecting their academic background, skills, interests, career goals, budget and preferred location with relevant career paths and educational opportunities. Its planned modules include AI-assisted career guidance, college and course recommendations, scholarship and certification suggestions, internship and skill-development opportunities, skill-gap analysis, personalized roadmaps, resume-building assistance and progress tracking.

The proposed architecture uses React.js for the user interface, Node.js and Express.js for backend services, MongoDB for data persistence and an external AI API such as OpenAI or Google Gemini for conversational and explanatory capabilities. The methodology combines student-profile collection, structured opportunity information, profile-to-item matching, AI-assisted explanations and roadmap generation. Particular attention is given to source verification, uncertainty communication, privacy and the need to keep final decisions under student control.

The contribution of Nexora is the proposed integration of several guidance activities into a single student-oriented workflow. This paper does not claim measured improvements in recommendation accuracy, academic performance or employment outcomes. Such claims require implementation evidence and systematic evaluation. The functional test scenarios and evaluation dimensions presented here provide a basis for that future work. With reliable information sources, careful AI governance and user-centred evaluation, Nexora has the potential to serve as a practical decision-support platform that helps students explore options and plan their next steps.

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