**BRIDGING CAREER GAPS USING AI-DRIVEN CAREER PATHWAYS AND ENGAGING AUGMENTED REALITY SIMULATIONS**

## 1, \*SOHANA R, 2, \*NIHARIKA R, 3, \*KHUSHI SHAH, 4, \*TANYA SINGH

UG Scholar, *Department of Computer Science and Technology*

*Dayananda Sagar University*, Bengaluru, India

1, \*Corresponding Author

5,\*Dr M SHAHINA PARVEEN

Chairperson*, Department of Computer Science and Technology*

*Dayananda Sagar University*, Bengaluru, India

***Abstract--* This project focuses on creating an AI-driven career counseling platform that recommends suitable career options for students based on their individual profiles and interests. By utilizing AI for personalized suggestions, the platform evaluates factors such as students’ interests, strengths, and preferred work environments. Recent studies indicate that AI-powered systems greatly enhance the accuracy and reliability of career counseling services by analyzing extensive behavioral and educational data. Furthermore, the platform incorporates Augmented Reality (AR) to simulate real-world career environments, enabling students to interactively explore potential career paths. Research has demonstrated that AR-based tools improve career exploration by offering immersive, hands-on experiences in various professions. By merging AI and AR, this innovative approach fosters informed decision-making and comprehensive career exploration among students. The platform aims to enhance awareness and alignment between students' aspirations and career paths, ultimately leading to improved educational and career outcomes.**

***Keywords--*** ***Augmented Reality, Artificial Intelligence, Career Guidance, Interactive Simulations, Skill Enhancement***

1. INTRODUCTION

The issue of students making poor career choices is a pervasive problem with far-reaching implications. Studies indicate that up to 90% of students pursue careers that are misaligned with their skills, interests, or passions, primarily due to inadequate career guidance [1]. This misalignment not only hampers individual growth and satisfaction but also has broader socio-economic consequences. Students often face challenges such as low productivity, underperformance, and mental health issues, including anxiety, depression, and chronic stress, as they struggle to find fulfillment in their chosen careers [3].

Furthermore, a recent survey revealed a stark lack of awareness among students regarding the diversity of career options available. Approximately 93% of students are familiar with only a handful of traditional career paths, such as engineering, medicine, law, and IT, overlooking a vast landscape of over 800 potential career opportunities [4]. This limited exposure stems from societal expectations, peer pressure, and insufficient access to comprehensive career counseling resources [5]. Consequently, students often make decisions influenced by external factors rather than their genuine interests and aptitudes, perpetuating dissatisfaction and disengagement in their professional lives.

Poor professional choices have a ripple effect on the labor market. Almost 75% of companies report significant skill gaps within their workforce, which directly impacts innovation and organizational success. The gap between educational qualifications and market demands leads to widespread job dissatisfaction, underemployment, and inefficiencies in the labor market. The difficulties businesses encounter in attracting and retaining qualified personnel negatively affect the global economy, highlighting the urgent need for a transformative approach to career counseling. In this scenario, augmented reality (AR) and artificial intelligence (AI) stand out as powerful tools that can fundamentally reshape career counseling. With its extensive data processing and analytical capabilities, AI can offer personalized recommendations that align with an individual's interests, strengths, and aspirations. Recent studies show that AI-driven initiatives can improve the accuracy of career counseling by 85%, making them far more effective than traditional methods. AR allows students to experience and replicate real-world work environments, providing immersive and engaging experiences. This advanced technology helps students gain insights into a variety of career options by connecting academic knowledge with practical experience. The combination of AI and AR offers a unique opportunity to address issues related to career misalignment. By utilizing AR's immersive simulations alongside AI's analytical insights, students can explore different job paths, understand the daily realities of various roles, and make informed decisions that suit their personal profiles. This comprehensive approach not only empowers students to align their goals with market needs but also equips them with the confidence to successfully navigate the complexities of today's job markets. The implementation of an AI-driven career counseling platform that utilizes augmented reality offers more than just personalized guidance. By raising awareness, bridging skill gaps, and tackling unemployment, it could transform educational institutions. These solutions can lead to thriving communities through enhanced productivity and innovation, provide businesses with a skilled workforce, and equip students to seek fulfilling careers.

1. LITERATURE REVIEW

Numerous studies have explored how AI and emerging technologies can revolutionize traditional approaches and improve student outcomes in career counseling and educational systems.

AI-Driven Systems for Career Guidance: Patel et al. illustrated how AI systems like Pathfinder AI can offer personalized job recommendations by analyzing students' academic performance and extracurricular activities. These systems employ algorithms such as Adaboost and K-Means Clustering, with plans to incorporate psychometric testing and industry feedback in the future [1]. In a similar vein, Ghuge emphasized the advantages of AI in enhancing career alignment through the use of advanced algorithms and developments in psychometrics [7]. Research by Smith and Lee on augmented reality (AR) in career exploration demonstrated how AR can create engaging and interactive learning environments, helping students to grasp a variety of career options [2]. Tuta furthered this discussion by showing how AR-based technologies significantly improved educational outcomes, advocating for their wider use across different study programs [8].

Career Misalignment and Mental Health: Sharma and Gupta studied the psychological impacts of career misalignment and stressed the value of early-stage, proactive career advice programs that address students' goals. By providing more interesting and tailored suggestions, the combination of AI and AR may be able to lessen these difficulties. Difficulties and Ethical Issues in AI Guidance: Westman talked on the moral implications of employing AI in career counseling, arguing for a harmony between technology effectiveness and a human-centered methodology. Refining the maturity levels of AI's function in guidance processes may be the main focus of future study. Improving Educational Accessibility: According to Issa, AI-driven technologies are meant to improve higher education's accessibility and customization. These systems cater to the various demands of students by utilizing machine learning and natural language processing to offer customized assistance. Future Readiness and National Career Trends: The "Future of Jobs Report" from the World Economic Forum emphasizes how profession landscapes are always changing and how crucial cutting-edge technology are to prepare students for the changing labor market. AI in Secondary Career Guidance: Research on the application of AI in career counseling for secondary school students shows that it can enhance productivity and judgment. These solutions improve the overall guidance experience by assisting in the management of tasks and the removal of communication hurdles, especially in rural places. Automation and Augmented Reality: Shyr evaluated the use of AR in automation systems, focusing on student acceptability and the technology's suitability for use in classrooms. The findings suggest that integrating AR into education has a lot of potential, with future developments focused on developing more user-friendly and flexible solutions. AI-Powered Student Support: Data-driven insights and predictive analytics were the main areas of attention as researchers looked into how AI might improve student support. The conversation revolved around ethical concerns such the digital gap, privacy, and accessibility.Student Support Through AI: AI’s role in enhancing student support was explored, emphasizing data-driven insights and predictive analytics. Ethical considerations such as privacy, accessibility, and the digital divide were central to this study [13].Experimental Learning Using AR: Sulistyanto’s work demonstrated the impact of AR in enhancing critical thinking skills among students. It revealed that AR-based learning media could significantly improve comprehension and foster independent learning [14].

1. PROBLEM STATEMENT

A major problem is the lack of proper career advice in schools, particularly in developing nations like India where students frequently lack the knowledge they need to make wise career decisions. A mismatch between skills and job roles, job unhappiness, and, frequently, unemployment can result from this. Students' limited exposure to a wide range of employment alternatives is one of the main causes of this problem. Career counseling is either underfunded, insufficiently individualized, or nonexistent in many educational institutions, enabling students to make career options on their own with minimal assistance.

Furthermore, rather than choosing a career based on their own interests or skills, students are frequently influenced by social pressures, familial expectations, and a lack of knowledge about cutting-edge subjects like artificial intelligence, data science, or green technology. Such choices can have serious repercussions, frequently resulting in reduced productivity, job discontent, and mental health issues as a result of career misalignment. Students also have a harder time finding opportunities that fit their individual skills, personalities, and goals in places with little access to sophisticated educational resources. Because there are so few career counselors and mentors in rural and semi-urban areas, this problem is more noticeable there. Consequently, even though their interests or skills may be more suited to other professions, students frequently choose traditional career routes in industries like engineering, medicine, or law. A dynamic, technology-driven approach that provides kids with individualized career coaching is desperately needed to address this problem. Such a solution should integrate augmented reality (AR) to provide immersive, interactive experiences that allow students to explore several career choices in a hands-on manner, and use artificial intelligence (AI) to assess students' talents, interests, and personality traits. The gap between traditional career advice and the variety of opportunities accessible today can be closed with the aid of this technology-driven approach.

1. METHODOLOGY

Our methodical approach to developing a customized career counseling solution blends artificial intelligence (AI) and augmented reality (AR) to provide a fun and dynamic experience. To guarantee that the finished product successfully meets the needs of students and enhances their career exploration trip, this process is organized into phases, each of which builds upon the one before it.

**Planning and Understanding Problems**

1. Clearly state the problem and goals of the project.

2. Clearly define the project's objectives and scope.

3. Assign responsibilities to team members and allot resources for every stage.

**Prospecting and User Research**

1. Determine who the intended audience is (students).

2. Develop thorough student profiles to guide AI instruction.

3. To learn more about the needs, preferences, and difficulties that students have when pursuing careers, conduct research.

Information Gathering

1. Compile user data, such as academic achievement, student interests, and anonymised career-related data.

2. Compile career information, including the skills, credentials, and room for advancement needed for different occupations.

3. Identify the fundamental abilities and tasks required for career simulations.

**Development of AI Models**

1. Use clustering and classification methods to train the AI model.

2. Create a model that assesses the interests, career inclinations, and profiles of students.

3. Use test data to confirm the model's correctness and make necessary adjustments for better performance.

**Development of AR**

1. Develop and produce realistic augmented reality settings for career simulations.

2. Include interactive components that let students explore various career options.

3. Assure a seamless transition between AR and the features for career discovery.

**Integration**

1. Integrate AR simulations with the AI model to provide tailored career advice.

2. Provide personalized career trajectories by connecting student profiles to AI-based career simulations.

**Testing and Gathering Input**

1. Perform preliminary testing for AR experiences and model recommendations.

2. Get user input regarding the effectiveness and usability of the AI- and AR-powered career counseling system.

**Launch and Gather Input**

1. Following Publication launch the product and monitor user activity.

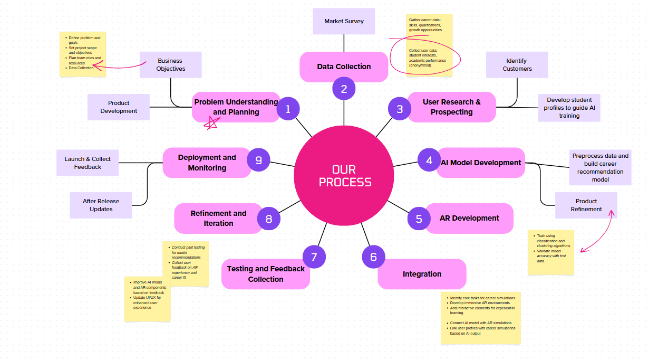
2. Constantly collect user input to assess the effectiveness and applicability of the system.

**Product Improvement**

1. Improve the AR features and AI model in response to user input.

2. To increase usability, update the design of the user interface (UI) and user experience (UX).3. Enhance the career simulation to more closely resemble actual work scenarios.

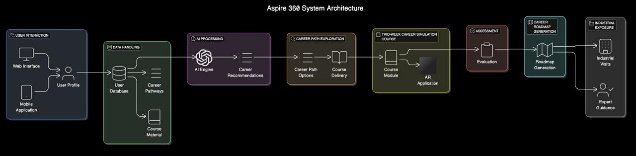
By using cutting-edge technologies like AI and AR, we hope to create a robust, flexible, and user-focused career counseling system that provides students with individualized and engaging resources for career research.



*Fig 1:Methodology and Workflow Diagram)*

1. SYSTEM ARCHITECTURE

This study highlights the enormous potential of integrating sophisticated machine learning models



*Fig2: System Design*

1. CONCLUSION

Ineffective career counseling, social pressures, and a lack of exposure to diverse employment options are frequently the causes of students' poor career decisions. While the Future of Jobs Report emphasizes the pressing need to narrow the skill gap in the workforce, Sharma and Gupta draw attention to the mental health problems that might result from career misalignment. According to Akosah-Twumasi et al., who study the cultural influences on profession choices, thorough and focused career counseling can assist in addressing these problems. In order to transform career counseling, AI and AR technologies are essential. Westman et al. and Patel et al. demonstrate how AI can evaluate student profiles to provide tailored career advice while preventing bias and maintaining openness. Similarly, Smith and Lee, as well as Tuta and Luić, highlight how AR can effectively offer immersive job exploration experiences that assist students in making educated decisions. A systematic career counseling framework that incorporates AI and AR can improve decision-making, accessibility, and cultural sensitivity. Proponents of AI-powered career counseling programs and those that emphasize the benefits of AR-based learning resources for critical thinking embrace this approach. While Davis and Singh discuss the ethical concerns related to AI in career counseling, Johnson and Brown stress the significance of leveraging technology to improve professional support. White and Chen also point out recent advancements in instructional technology that have the potential to transform career exploration. Future studies should aim to enhance AI and AR technologies to boost their effectiveness across various educational settings. Issa et al. suggest that incorporating AI-driven tools in classrooms can lead to effective and scalable solutions. Shyr et al. emphasize the need for educational awareness programs for both teachers and students to promote the ethical use and acceptance of these technologies.It is clear that a comprehensive ecosystem is necessary, one that integrates robust career counseling frameworks with AI and AR technology. This ecosystem would align students' goals with their skills, addressing the evolving demands of the job market and fostering a more satisfied and capable workforce. With this approach, students will be better prepared to navigate complex career paths, supporting personal development and benefiting society as a whole.

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