PRESIDENCY UNIVERSITY
Private University Estd. in Karnataka State by Act No. 41 of 2013
Itgalpura, Rajankunte, Yelahanka, Bengaluru – 560064

AI-ENHANCED CAREER GUIDANCE SYSTEM FOR PESONALIZED CAREER PATHWAYS

A PROJECT REPORT

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IN

COMPUTER SCIENCE AND ENGINEERING

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BONAFIDE CERTIFICATE

Certified that this report AI-ENHANCED CAREER GUIDANCE SYSTEM FOR PESONALIZED CAREER PATHWAYS is a bonafide work of ADITHYAN S NAMBIAR (20221CSE0223), S KRISHNA KUMAR (20221CSE0184), K NANDAN (20221CSE0179), who have successfully carried out the project work and submitted the report for partial fulfilment of the requirements for the award of the degree of BACHELOR OF TECHNOLOGY in COMPUTER SCIENCE ENGINEERING, during 2025-26.

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DECLARATION

We the students of final year B.Tech in COMPUTER SCIENCE ENGINEERING, at Presidency University, Bengaluru, named ADITHYAN S NAMBIAR, S KRISHNA KUMAR, K NANDAN hereby declare that the project work titled **AI-ENHANCED CAREER GUIDANCE SYSTEM FOR PESONALIZED CAREER PATHWAYS** has been independently carried out by us and submitted in partial fulfilment for the award of the degree of B.Tech in COMPUTER SCIENCE ENGINEERING, during the academic year of 2025-26. Further, the matter embodied in the project has not been submitted previously by anybody for the award of any Degree or Diploma to any other institution.

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Abstract

Selecting a suitable career path has grown more difficult for students and working professionals in the quickly changing professional landscape of today. Making decisions can be overwhelming due to the variety of career options, the rise of new roles, and the ever-changing job market trends. Even though they are helpful, traditional career counseling techniques are generally generic, time-consuming, and unable to provide the level of customization and flexibility required for effective guidance. Additionally, they do not incorporate real-time labor market insights, which could result in recommendations that fall short of industry standards or opportunities in the future.

In order to provide tailored, data-driven recommendations, this paper suggests an AI-Enhanced Career Guidance System that integrates machine learning and natural language processing (NLP). Academic performance, interests, and skills are among the user-specific data that the system gathers and compares to job descriptions, industry standards, and new skill trends. While machine learning algorithms analyze patterns and produce career pathways that match employability standards and individual goals, natural language processing (NLP) is used to process user inputs and contextual factors.

Comparing the system to traditional approaches, experimental evaluation shows that it greatly increases the accuracy and applicability of career recommendations. Users expressed greater satisfaction, pointing out that the system increased their confidence in making decisions and provided useful insights. The system facilitates effective career planning and closes the gap between academic preparation and practical opportunities by guaranteeing flexibility and scalability.

To provide more comprehensive career guidance in the future, the framework can be improved with psychometric tests, analytics of the global labor market, and sophisticated recommendation models. These AI-powered solutions have the potential to enable professionals, students, and organizations to make well-informed, sustainable career decisions that meet changing labor market demands.

Keywords— AI, Machine Learning, Career Guidance, NLP, Career Pathways