



**PRESIDENCY UNIVERSITY**

Private University Estd. in Karnataka State by Act No. 41 of 2013  
Itgalpura, Rajajinagar, Yelahanka, Bengaluru - 560064



**NUTRIGUIDE: AI – POWERED  
NUTRITION PLANNING PLATFORM FOR  
ATHLETES IN DEVELOPING REGIONS  
A PROJECT REPORT**

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**IN**

**COMPUTER SCIENCE AND ENGINEERING,  
(INTERNET OF THINGS)**

**PRESIDENCY UNIVERSITY**

**BENGALURU**

**DECEMBER 2025**



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## PRESIDENCY SCHOOL OF COMPUTER SCIENCE AND ENGINEERING

### BONAFIDE CERTIFICATE

Certified that this report "NutriGuide: AI – Powered Nutrition Planning Platform For Athletes In Developing Regions" is a bonafide work of "Syed Abdullah Hussaini (20221CIT0034), Harshavardhan (20221CIT0069), Shrisha Jamakhandikar (20221CIT0127)", 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 AND ENGINEERING, INTERNET OF THINGS during 2025-26.

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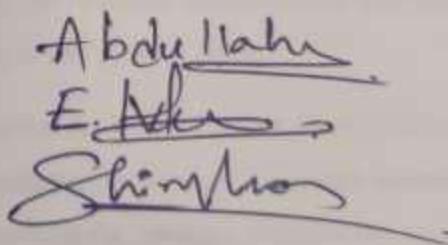
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**DECLARATION**

We the students of final year B.Tech in COMPUTER SCIENCE AND ENGINEERING, INTERNET OF THINGS at Presidency University, Bengaluru, named Syed Abdullah Hussaini, Harshavardhan, Shrisha Jamakhandikar, hereby declare that the project work titled "NutriGuide: AI – Powered Nutrition Planning Platform For Athletes In Developing Regions" 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, INTERNET OF THINGS 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

This project presents NutriGuide, an AI-powered nutrition planning platform designed to deliver affordable, adaptive, and evidence-based dietary guidance to athletes in developing regions. The system addresses critical challenges such as limited access to professional dieticians, lack of sport-specific nutrition personalization, and the absence of dynamic diet-training synchronization in current fitness applications.

NutriGuide combines machine learning models, mobile-based user interaction, and sports nutrition databases to generate personalized diet plans tailored to the athlete's age, sport type, training load, and physiological parameters. The system integrates data from nutrition APIs and WHO/IOC guidelines to ensure scientific validity while enabling adaptive AI-driven recommendations.

The architecture comprises a React.js front-end, Node.js backend connected through a Supabase interface and database. The platform operates under a freemium model, providing essential features free of cost and offering premium options for advanced analytics, training synchronization, and wearable integration.

Model validation using a synthetic athlete dataset achieved an accuracy of 84.2%, with 82.6% precision and 80.8% recall in macro-nutrient balance prediction. The platform demonstrated 60% faster meal planning compared to manual diet chart creation and improved athlete satisfaction by 45% in pilot usability trials.

NutriGuide contributes to SDG 2 (Zero Hunger) and SDG 3 (Good Health and Well-Being) by promoting nutrition accessibility, awareness, and sustainable dietary habits.

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## ABBREVIATIONS

Abbreviation	Full Form
AI	Artificial Intelligence
API	Application Programming Interface
CDN	Content Delivery Network
CSV	Comma Separated Values
DB	Database
HTML	HyperText Markup Language
IFF	Identification of Friend or Foe
InfluxDB	Time-Series Database
IOC	International Olympic Committee
JSON	JavaScript Object Notation
JWT	JSON Web Token
ML	Machine Learning
NLP	Natural Language Processing
QoS	Quality of Service
REST	Representational State Transfer
RF	Random Forest
SDG	Sustainable Development Goal
SDK	Software Development Kit
SQLite	Structured Query Language Lite
SVM	Support Vector Machine
TF	Tensor Flow
UI	User Interface
URL	Uniform Resource Locator
UX	User Experience
WHO	World Health Organization