

TE Mini Project-I Report

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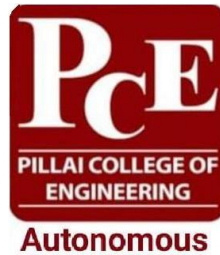
## **GYM NUTRITION SYSTEM**

Submitted in partial fulfillment of the requirement of  
University of Mumbai for the Degree of

**Bachelor of Technology**  
In  
**Information Technology**

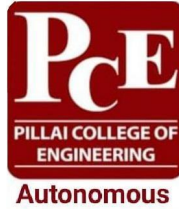
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**Department of Information Technology**  
**PILLAI COLLEGE OF ENGINEERING**

**New Panvel – 410 206**  
**UNIVERSITY OF MUMBAI**  
**Academic Year 2023-24**



DEPARTMENT OF INFORMATION TECHNOLOGY

Pillai College of Engineering

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# CERTIFICATE

This is to certify that the requirements for the TE Mini Project-I report entitled ‘**Gym Nutrition System**’ have been successfully completed by the following students:

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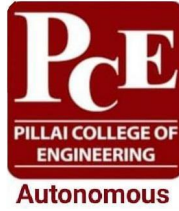
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DEPARTMENT OF INFORMATION TECHNOLOGY

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# REPORT APPROVAL

This TE Mini Project-I report entitled “**Gym Nutrition System**” by Harsh Patil, Smruti Todkar, Samarth Patil, Piyush Pandey is approved for the degree of **Bachelor of Technology** in **Information Technology**.

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Chairman:

1. \_\_\_\_\_

Date:

Place:

## Declaration

We declare that this written submission for TE Mini Project-I Report Declaration entitled “**Gym Nutrition System**” represents our ideas in our own words and where others' ideas or words have been included. We have adequately cited and referenced the original sources. We also declared that we have adhered to all principles of academic honesty and integrity and have not misrepresented or fabricated or falsified any ideas / data / fact / source in our submission. We understand that any violation of the above will cause disciplinary action by the institute and also evoke penal action from the sources which have thus not been properly cited or from whom paper permission has not been taken when needed.

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## **Abstract**

Website for a precision nutrition one-size-does-not-fit-all system based on nutrition information that provides tailored meal planning. Gym and fitness fanatics were a segment of the community that was not included in its four-part developmental research even though they were significant target users. supplying each person with a customized diet that takes into account the physical makeup of their body and offering specifics on the foods' nutritional values. Welcome to our ground-breaking knowledge-based method for nutrition! Utilize precision nutrition by using our website, where customized meal plans are created based on your particular requirements. Although the groundwork was created by our four-part developmental study, we agree to a crucial user group of gym and fitness enthusiasts was left out. To close this gap, we have created strategies that are customized to their active lifestyles. By providing consumers with a journey via ingredient insights and their benefits, our website delves into the science behind tailored nutrition. We are changing nutrition for everyone, bridging the gap between fitness and nutrition, and offering a platform where personalisation meets health.

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# Chapter 1

## Introduction

### 1.1 Fundamentals

In the ever-evolving landscape of health and wellness, the quest for personalized nutrition has taken center stage. Today, we introduce a groundbreaking approach to nutrition that challenges the conventional "one-size-fits-all" model, taking into account the unique needs and characteristics of each individual. Our precision nutrition system is designed to revolutionize the way we think about food and health, providing tailored meal plans that consider not only your personal requirements but also the intricate science behind nutritional values.

Our journey began with a comprehensive four-part developmental research initiative, aimed at understanding and addressing the diverse dietary needs of various individuals. However, during this phase, we recognized a significant gap within our user community that had not received the attention it deserved – the gym and fitness enthusiasts, whose active lifestyles demand specialized dietary solutions.

Recognizing this oversight, we embarked on a mission to close this gap, and in doing so, we have crafted strategies that are finely tuned to the unique needs of gym and fitness fanatics. Our commitment to inclusivity ensures that everyone can benefit from the power of personalized nutrition, regardless of their lifestyle or fitness goals.

Our website serves as the platform where this pioneering knowledge-based approach to nutrition comes to life. Here, we provide you with a personalized meal planning experience, taking into account the intricacies of your body's physical makeup and the specific nutritional requirements that drive your overall well-being.

But we don't stop there. Our platform delves deep into the science behind tailored nutrition, offering ingredient insights and the invaluable benefits they bring to your health and fitness journey. With us, the gap between fitness and nutrition is bridged, creating a seamless integration where personalization meets health, ensuring that your nutritional needs are met, whether you're a gym enthusiast or someone on a unique path to wellness.

In this report, we will delve into the core principles of precision nutrition, showcasing the

innovative methods and insights that form the backbone of our system. We will highlight the strides made to cater to the needs of gym and fitness enthusiasts, thus ensuring that no one is left behind on the road to better health.

Prepare to embark on a transformative journey through the world of precision nutrition, where health and fitness become not just goals but a way of life. Welcome to the future of personalized dietary solutions – the place where science meets nutrition, and your unique needs take center stage.

## **1.2 Objectives**

The objectives of the project, based on the provided abstract, are as follows:

1. **Develop a Precision Nutrition System:** Create an innovative precision nutrition system that challenges the traditional one-size-fits-all approach to nutrition and provides personalized meal planning.
2. **Tailored Meal Plans:** Offer customized meal plans that take into account the individual's specific requirements, including their physical makeup, dietary preferences, and nutritional needs.
3. **Incorporate Scientific Knowledge:** Integrate scientific knowledge into the nutrition system, ensuring that dietary recommendations are evidence-based and backed by the latest research in the field of nutrition and health.
4. **Inclusivity for Gym and Fitness Enthusiasts:** Address the needs of gym and fitness enthusiasts who were initially left out of the development research. Develop strategies and solutions tailored to their active lifestyles and nutritional requirements.
5. **Educational Component:** Provide users with comprehensive knowledge about the nutritional values of various foods, offering insights into the benefits of specific ingredients. Empower users with the understanding of the science behind tailored nutrition.

6. Bridge the Gap Between Fitness and Nutrition: Create a seamless integration of fitness and nutrition, ensuring that personalization meets health. Offer a platform where individuals can find solutions that cater to their unique requirements while pursuing an active lifestyle.
7. Transform Nutrition for All: Revolutionize the field of nutrition by making personalized dietary solutions accessible to a wide range of individuals, irrespective of their lifestyle or fitness goals.
8. Website Development: Establish and maintain a user-friendly website as the primary platform for delivering the precision nutrition system and educational content.

### **1.3 Scope**

The scope of the project is defined by the goals and objectives outlined in the abstract and objectives section. It encompasses a wide range of activities and considerations, including:

**System Development:** Design, develop, and implement a precision nutrition system that can generate personalized meal plans based on individual needs and preferences.

**Website Creation and Maintenance:** Establish and maintain a user-friendly website as the primary platform for delivering the precision nutrition system, educational content, and other related resources.

**User Research and Profiling:** Collect and analyze user data to understand their unique nutritional requirements, physical makeup, and lifestyle factors. Create user profiles to inform personalized meal planning.

**Nutritional Information and Education:** Gather and provide comprehensive nutritional information and educational content that explains the science behind tailored nutrition. This includes ingredient insights, benefits of specific foods, and the latest research findings in nutrition.

Inclusivity for Gym and Fitness Enthusiasts: Develop and implement strategies that cater specifically to the needs of gym and fitness enthusiasts, addressing their unique dietary requirements and active lifestyles.

#### **1.4 Outline**

In our groundbreaking precision nutrition website, challenging the one-size-fits-all model. Our system offers tailored meal planning, acknowledging each individual's unique needs and body composition. In our four-part developmental research, we initially overlooked an essential user group: gym and fitness enthusiasts. To address this gap, we've created specialized strategies to accommodate their active lifestyles.

Our platform doesn't just plan meals; it educates. We provide insights into ingredients, their nutritional benefits, and the science behind personalized nutrition. Our mission is to transform nutrition for all, bridging the gap between fitness and nutrition, and offering a platform where personalization meets health. Join us on this transformative journey toward a healthier and more personalized approach to nutrition.

# **Chapter 2**

## **Literature Survey**

In this chapter the relevant techniques in literature are reviewed. It describes various techniques used in the work. Identify the current literature on related domain problems. Identify the techniques that have been developed and present the various advantages and limitations of these methods used extensively in literature.

Write the advantages and disadvantages of this method. The summary of the literature presented at the end of this Chapter.

A literature review is an objective, critical summary of published research literature relevant to a topic under consideration for research. Its purpose is to create familiarity with current thinking and research on a particular topic, and may justify future research into a previously overlooked or understudied area [1].

A typical literature review consists of the following components:

1. Introduction
2. Main Body
3. Conclusion
4. References

### **2.1 Technique Category One**

The techniques in this category are adapted to the individual needs, interests and preferences of user or society. They are tools for suggesting items to users in this domain. Various techniques in this category are listed here. These techniques have various advantages and are used extensively in literature.

#### **2.1.1 Technique One**

This technique is used by Author One [2] for XYZ purpose. It presents the state of the Art and discusses the main issues related to this domain problem. It discusses various techniques starting from simple techniques for representing structured data, to more complex techniques coming from

the unstructured data. Write the advantages and disadvantages of this method. This work is divided into three parts. Discuss each part here.

### **2.1.2 Technique Two**

It was developed by Author Two et al. [3]. It presents the survey and experiments the two domain related techniques. These techniques show the complementary advantages and disadvantages. It compares the various techniques and shows which techniques are better based on the evaluation metrics. This fact has provided incentive for research in this domain for improved performance. It proposes various hybrid approaches that gives better results.

## **2.2 Technique Category Two**

The techniques in this category are adapted to the individual needs, interests and preferences of user or society. They are tools for suggesting items to users in this domain. Various techniques in this category are listed here. These techniques have various advantages. Write advantage and disadvantage of this method.

### **2.2.1 Technique Three**

Author Three et al. [4] applied similar techniques on different datasets. It introduces the flow of the domain system and the specific realization procedures of data input, data preprocessing, and other related steps. Results show that this technique in this domain has shown great performance.

### **2.2.2 Hybrid Approach One**

Author Four has presented a hybrid approach [5] for ABC domain technique for XYZ purposed. The architecture is shown in Figure 2.1 It explores a new hybrid approach for solving the problem of finding the solutions based on user inputs. The proposed technique provides improvements in addressing two major challenges of this domain system: LMN and OPQ.

The evaluation of the system shows superiority of the solution compared to stand-alone user-based ABC techniques. It shows that the hybrid approach improves the various problems.

## 2.3 Literature Summary

A literature review is an objective, critical summary of published research literature relevant to a topic under consideration for research. The summary is presented here.

Table 2.1 Summary of literature survey

SN	Paper	Advantages and Disadvantages
1.	Author One [2]	Advantages: Learning of profile is made easy. Quality improves over time. Considers implicit feedback. Disadvantages: Does not completely overcome the problem of abc and xyz.
2.	Author Two et al. [3]	Advantages: The web site based on this has shown great performance. Disadvantages: It does not recommend quality content to the users. Does not consider new user ABC problem. Not very efficient in terms of performance.
3.	Author Three et al. [4]	Advantages: The survey shows combine techniques for improved performance. It improves the user preferences for suggesting items to users.
4.	Author Four [5]	Advantages: It solves the problem of finding xyz. It improves lmn problem. Disadvantage: It does not consider the abc features which would give better results and solve the abc problem.



## Chapter 3

### Proposed System

#### 3.1 Overview

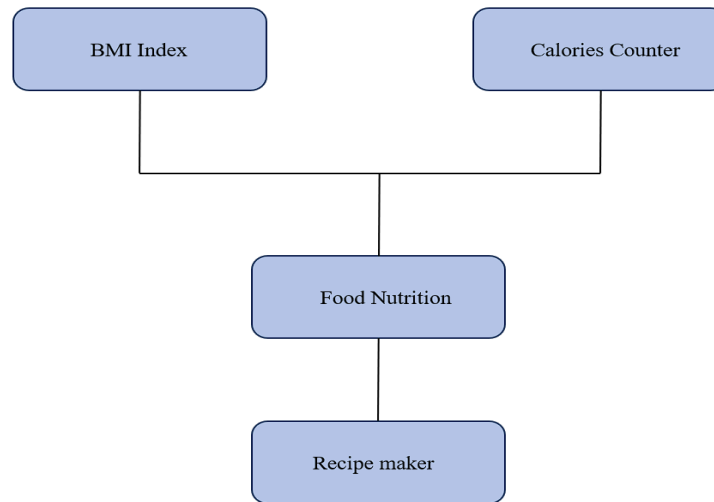


Fig. 3.1 Procedure of health system

This system helps users to guide the step by step procedure to have a healthy nutritional diet plan.

- **Landing page:** A page from which you can navigate through every part of the system.
- **BMI Index Calculator :** 1st step in is to calculate accurate value of your body mass index by given formula ( $\text{weight}/(\text{height}*\text{height})$ ), ideal BMI index value should lie in 18-25.
- **Calories Counter:** After calculating BMI index value users can have a calories intake value in kcal/day depending upon your ideal range.
- **Food Nutrition Gallery :** For fulfilling the required calorie value you can choose different healthy food items to get your diet plan
- **Recipe Maker :** After choosing your food items you can create an edible recipe using those items for better taste and flavor.

### 3.1.2 Proposed System Architecture

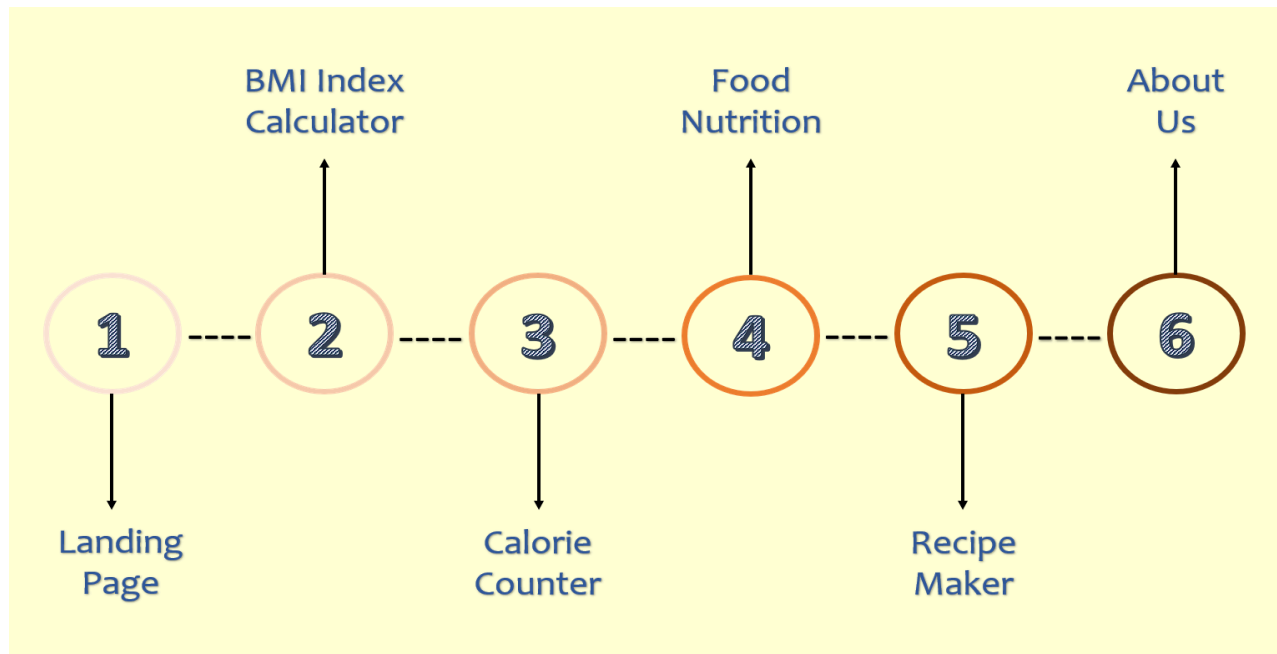


Fig. 3.2 Proposed system architecture of Health Nutritional System

- 1. Landing page:** A navigating page to overview every part of the nutrition system.
- 2. BMI index Calculator:** It is given to calculate users BMI value to see his or her weight category.
- 3. Calorie Counter:** After Calculating your BMI Index user can know his or her calorie intake.
- 4. Food Nutrition:** For fulfilling Calorie Count users can add food items shown in the database.
- 5. Recipe Maker:** For better taste and flavors you can generate many recipes.
- 6. About Us:** A page gives an overall idea of this food nutrition system.

### 3.2 Implementation Details

We have created a web application system using html, css and javascript with the help of Mysql workbench to create a Database.

#### 3.2.1 Technique Used

We used the following techniques to implement our food nutrition system.

- Creating database: We have created a Database of different food items in Mysql Workbench.
- Add to cart option: We added a separate cart to list down user chosen food items individually.
- ML Based Algorithm : We have created a algorithm which generates recipes as per protein,calories and nutrients requirement also there is a option to add specific ingredients.

#### 3.2.2 Sample Dataset Used

We used or followed the following approach while creating or setting up the database in Mysql:

**step 1:** Connection root user with local host

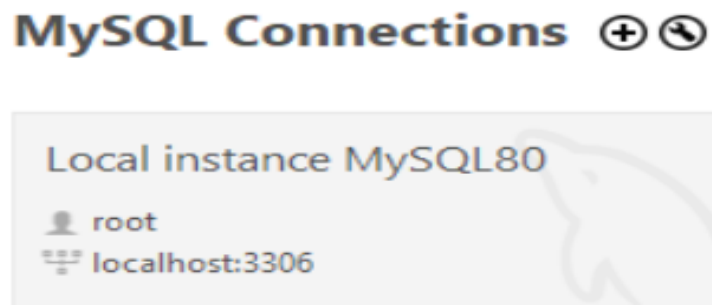


fig 3.3 Connection with Mysql

## step 2: Creating a database

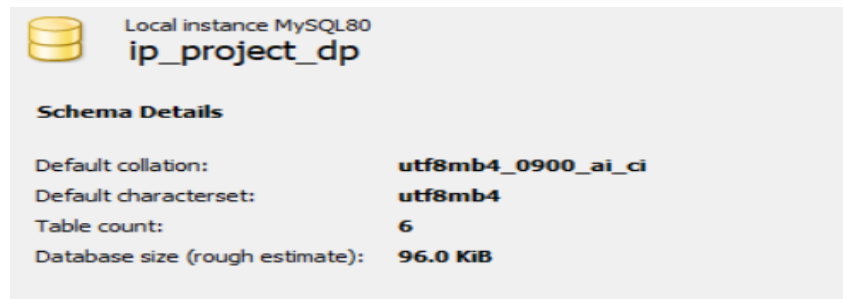


fig 3.4 Creating Project Database

## step 3: Creating tables in database

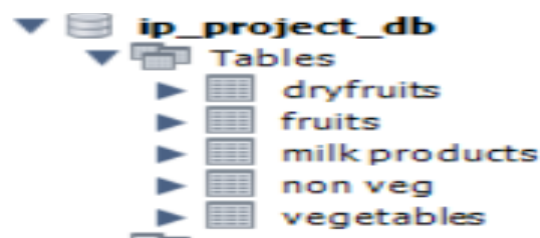


fig 3.5 Creating tables

## step 4: Adding information in table

	id	Dry_fruit_name	Calories	Portion_size_per_100g	Nutritional_content
▶	17	Almonds	160 kcal	28 grams	lmonds are a good source of healthy fats, prote...
	18	Walnuts	185 kcal	28 grams	Walnuts are rich in omega3 fatty acids, antioxid...
	19	Cashews	160 kcal	28 grams	Cashews offer healthy fats, protein, vitamin K, ...
	20	Pistachios	160 kcal	28 grams	Pistachios provide protein, fiber, healthy fats, v...
	21	Raisins	42 grams	129 kcal	Raisins are a good source of natural sugars, fib...
	22	Dried Apricots	42 grams	80 kcal	Dried apricots are rich in vitamin A (as betacar...
	23	Prunes	42 grams	81 kcal	Prunes are a good source of dietary fiber, vita...
	24	Dates	42 grams	120 kcal	Dates provide natural sugars, fiber, potassium, ...
★	NULL	NULL	NULL	NULL	NULL

fig 3.6 Inserting values in table

### 3.2.3 Hardware and Software Specifications

The experiment setup is carried out on a computer system which has the different hardware and software specifications as given in Table 3.2 and Table 3.3 respectively.

Table 3.2 Hardware details

Processor	3 GHz Intel i3/i5 /AMD Ryzen 3/5
HDD	180 GB
RAM	8 GB

Table 3.3 Software details

Operating System	Windows 11
Programming Language	html, CSS, javascript, Mysql, Django
Database	Mysql

# Chapter 4

## Applications

There are various applications of the Nutritional system. The application is listed here.

### 4.1 Personalized Nutrition Plans:

- Customized meal plans are tailored to an individual's specific dietary requirements, taking into account factors such as age, gender, activity level, and dietary preferences.
- The plans can address nutritional deficiencies, allergies, and sensitivities, ensuring that users receive the most suitable diet for their unique needs.

### 4.2 Improved Health Outcomes:

- **Weight Management:** Personalized nutrition can help users achieve and maintain a healthy weight, reducing the risk of obesity-related health issues.
- **Chronic Disease Prevention:** It assists in preventing and managing conditions like diabetes, heart disease, and hypertension, as nutrition plans can be adapted to address specific health concerns.
- **Gut Health:** Personalized diets can improve gut health, promoting digestion and reducing gastrointestinal issues.

### 4.3 Fitness Enthusiasts and Athletes:

- **Energy Optimization:** Tailored nutrition supports energy levels, allowing athletes to perform at their best during workouts and competitions.
- **Muscle Development:** Nutrition plans can be designed to support muscle growth and repair, aiding in strength and endurance.
- **Recovery:** Personalized post-workout nutrition can accelerate recovery and reduce the risk of injury.

#### 4.4 Dietary Education:

- **Nutritional Insights:** Users gain a deeper understanding of the nutritional content of foods, helping them make informed dietary choices.
- **Health Benefits:** The project educates users on how specific foods and nutrients affect their health, empowering them to make healthier food selections.

#### 4.5 Chronic Disease Management:

- **Obesity:** Personalized nutrition can be employed to combat obesity, tailoring dietary plans to encourage healthy weight loss.
- **Heart Health:** It supports heart-healthy diets, reducing the risk of cardiovascular issues through specific dietary recommendations.
- **Diabetes:** Nutrition plans can help regulate blood sugar levels in individuals with diabetes, improving overall health.

#### 4.6 Sports Nutrition:

- **Performance Enhancement:** Athletes can optimize their dietary intake to improve performance, speed, and agility.
- **Recovery:** Post-exercise nutrition is personalized to facilitate faster recovery, reducing the risk of overuse injuries.

#### 4.7 Dietary Research:

- **Data Source:** Researchers can utilize the project's data to study the impact of personalized nutrition on health outcomes.
- **Advancements in Nutrition Science:** Research outcomes contribute to the ongoing development of nutrition science and dietary guidelines.

#### **4.8 Public Health Initiatives:**

- **Population-Level Health:** Governments and healthcare organizations can use precision nutrition to promote healthier eating habits and reduce the economic burden of diet-related health issues.
- **Public Education:** Information generated can be used to educate the public about the benefits of personalized nutrition.

#### **4.9 Marketing and Commercialization:**

- **Commercial Apps:** The project can serve as the basis for nutrition-related apps and services that can be marketed to fitness communities, health-conscious consumers, and those seeking specialized dietary solutions.
- **Dietary Products:** The research findings can support the development and marketing of dietary products, supplements, and food items customized for specific user groups.



## **Chapter 5**

### **Summary**

This project introduces a groundbreaking precision nutrition system, redefining conventional dietary approaches by offering tailored meal planning through a knowledge-based platform. We recognize that "one-size-does-not-fit-all" when it comes to nutrition, and our website is the solution. The system customizes meal plans, accounting for individual needs, body composition, and the nutritional values of foods.

While our four-part developmental research laid the foundation, we identified a significant omission: the gym and fitness community, a vital target user group. To bridge this gap, we've developed specialized strategies catering to their active lifestyles.

Moreover, our platform doesn't stop at meal planning; it educates users on ingredient insights and their benefits, grounding nutrition in science. Our mission is clear: we're transforming nutrition for everyone, uniting fitness and nutrition, and providing a platform where personalization meets health. Join us on this transformative journey to a healthier, more informed, and more personalized approach to nutrition.

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- [6] A. B. Author, "Title of paper," in Unabbreviated Name of Conf., City of Conf., Abbrev. State (if given), year, pp. xxx-xxx.

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