


# Chapter 1

## AI and Smart Cooking: Innovation in Gastronomy

**Partho Pratim Seal**

 <https://orcid.org/0000-0001-6867-8713>

*Welcomgroup Graduate School of Hotel Administration, Manipal Academy of  
Higher Education, India*

**Nagendra Yadav**

 <https://orcid.org/0009-0008-9743-9250>


*Welcomgroup Graduate School of Hotel Administration, Manipal Academy of  
Higher Education, India*

**Ankit Shukla**

 <https://orcid.org/0000-0002-7646-3517>

*Rajamangala University of Technology, Thanyburi, Thailand*

**Abhishek Tiwari**

 <https://orcid.org/0000-0003-2970-2092>

*Burapha University International College, Thailand*

### ABSTRACT

*Cooking is a basic requirement of human beings, as food is one of the necessities to meet human needs. Technological concepts like artificial intelligence, data science, and machine learning are being used to advance the smart kitchen in hotels and pave the way for the smart kitchen revolution. Smart cooking, along with artificial intelligence, can bring in a lot of automation in cooking. The chapter explores how innovation in the culinary field is changing the commercial kitchen with a focus on food safety, food quality, efficiency, and sustainability. The usage of AI in the culinary domain is restricted not only to a better dining experience for the customer but also to enhancing kitchen operations. The study follows a qualitative method of interviews with chefs to examine the academic literature on the chosen concepts by*

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*examining the literature in a wide range of contexts. The findings of the study state that smart cooking does provide convenience in working life, and technology will be a blessing in the future.*

## **INTRODUCTION**

Cooking is an art that combines and processes ingredients creatively to make a delicious dish, which is magical (Pollan, 2013). Humans have evolved the art of cooking, and the creative process has led to rich culinary legacies that define the culture globally (Freeman, 2009). Gastronomy is artistic, and with the increasing usage of structured data and various computational methods, it has changed the artistic approach of gastronomy vividly (Bagler & Goel, 2024). Over the centuries, gastronomy has evolved as an intersection of art, science, and culture. It includes the continuous development of innovative cooking techniques and kitchen equipment. The smart cooking technology allows the kitchen masters to showcase their creativity, making their cooking process more efficient and accurate, along with innovation.

Artificial Intelligence has gone through incredible growth and innovation, with the potential for growth in various fields, including the food industry. The food industry is implementing AI technology in various forms, such as recipe generation, meal planning, food waste management, and nutritional analysis. The AI algorithm can process large data and provide personalized recommendations, and streamline decision-making processes, which can increase efficiency and improve outcomes. As AI becomes more accessible and user-friendly, it now has a significant role in the food industry and also in our daily lives. The usage of smart cooking tools and technology is adding new life to the domain of culinary arts. The usage of smart ovens, sensors, and AI-powered devices helps chefs to perfect the dishes, maintaining the standards, along with sustainability and efficiency.

## **SMART CUISINE**

Smart Cuisine is an innovative system that features an ingredient calculator, an AI-generated recipe, and an OpenAI completion chat service that provides informed decisions about food choices and reducing food wastage. The ingredient calculator will calculate the exact amount of cost of ingredients, along with the proportion key, which will help to plan meals accordingly and save money. The function also ensures that the time, energy, and money a consumer spends lead to an appropriate meal. The AI-generated recipes will enable users to make recipes based on the availability of ingredients, allowing them to be more creative and reduce leftover

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