



Restaurant Monitoring System

Project Proposal

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Abstract

Restaurant Monitoring System is an easy-to-use and user-friendly interface that helps restaurants to keep a check on the staff. The system aims to enhance and maintain a hygienic and well-maintained environment. Everyone moves to restaurants whenever they want to relax and enjoy while having tasty food. If they don't get it, they will be unsatisfied which could ultimately lead to a bad reputation. These few things highlight the importance of a proper management and monitoring systems, which will not only assist the staff but also enhance the customer experience. "Restaurant Monitoring System" would provide services that will include the monitoring of staff, customer wait time, etc. These multiple features would be integrated using algorithms which might include AI, deep learning, and machine learning to ensure the excelling of the system. All over Pakistan, restaurants have surveillance systems that just focuses on the security but no one observed the need for a proper monitoring or management system, making a gap. Our project aims to bridge this gap by providing a suitable system to restaurants.

1. Introduction

Food is the most essential element in everyone's life. Restaurants are the main source of a place where people can enjoy a healthy environment and delicious food. But for employees, it is just a source of income. Ensuring regulation and productivity is incredibly important to enhance the customer experience. "Time is Power is Money" is a famous phrase that highlights the importance of these aspects in the success of any organization. An organization must have a proper management system leveraging these factors. A system that monitors the hygienic environment, customer wait times, and almost all the constraints that ensure the potency should be present in a restaurant.

Artificial Intelligence (AI) is the game changer in today's world. It is widely used to enhance efficiency and speed in various applications. Similarly, our system will be implemented using several AI techniques and tools to ensure its richness and competence.

2. Goals and Objectives

This project aims to enhance restaurant management, fulfill customer expectations, and ensure a hygienic environment.

The following are the objectives of the system:

- Build a platform to make the system easy for the staff.
- Checking the dress code of the chefs as per several constraints like an apron and head cap etc. using classification.
- Monitoring the peak time of the restaurant.
- Monitoring the waiting time of the customer till they have been attended by the waiter and until the order is served.
- Classifying the most ordered dishes.
- Keeping track of the number of customers coming in a day.
- Table Cleanliness Check.
- Selective video storage.

3. Scope of the Project

The project will go through several phases. The first phase would be to collect data from different restaurants. The data would be in the form of videos, specifically CCTV footage.

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Several preprocessing techniques would be used on the videos to extract the needed and important data. Moreover, several algorithms and techniques, mainly object detection, would be used on the dataset to integrate multiple features in the system. A mobile or desktop application may be built to ensure a user-friendly graphical interface making it easy to use.

4. Initial Study and Work Done So Far

Through our research, we noted that very famous restaurants have surveillance systems focusing only on security measures. They cannot provide the facility to enhance the general management of the restaurant. [1] We assessed common technologies used for better safety measures like motion sensors and how they work using advanced features. We found several unauthorized access detection techniques that have been utilized by several organizations for a very long time [2]. The journal [3] discusses the need for advanced techniques leveraging AI to upgrade the existing surveillance systems.

References

- [1] Wirth, M., & Wurst, J. (2020). Intelligent surveillance systems for hospitality management: A comprehensive review. *Journal of Hospitality and Tourism Technology*, 11(1), 115-130.
- [2] Zhao, H., & Yu, J. (2017). Advanced access control technologies for hotel security. *Journal of Hotel and Business Management*, 6(2), 1-7
- [3] Boella, G., & Finkelstein, L. (2020). Future directions in hospitality management: Integrating technology for enhanced service delivery and security. *International Journal of Hospitality Management*, 90, 102671