

Smart Medical Tray: An IoT and Voice Based Smart Kit

**Ms. Kalpana Oruganti¹, Ms. Pratyasha Pradhan², Ms. Rashmi Y³,
Ms. Shivalingamma⁴, Ms. Spoorthi A Chavhan⁵, Ms. Srushti⁶**

^{1,2} Professor, CS&E Dept, Proudhadevaraya Institute of Technology, Hosapete

^{3,4,5,6} Students, CS&E Dept, Proudhadevaraya Institute of Technology, Hosapete

Abstract: The Smart Medical Tray is an innovative AI and IOT-powered intelligent tray system designed to simplify and enhance the management of medicines and cosmetics. The system integrates temperature control, voice assistance, image recognition, and data analytics to provide a smart and convenient user experience. It continuously monitors and maintains the optimal temperature required for each stored item, ensuring product safety and effectiveness. Using voice and visual identification, the tray allows users to interact naturally — for instance, by saying “I have a headache,” it identifies the appropriate medicine, displays its image on a screen, and announces its name and usage instructions. The system also includes expiration alerts to notify users when an item is nearing or past its expiry date. With a multilingual voice assistant supporting English and Indian languages such as Hindi or Telugu, it caters to a wide range of users. Additionally, the re-minder feature enables users to schedule medicine intake or skincare routines, providing timely voice notifications with item details. The usage log system records each interaction, allowing the integrated AI to analyse patterns and suggest items based on user behavior. Overall, Smart Medi-cal Tray combines IOT-based sensing with AI-driven intelligence to offer a comprehensive health and lifestyle companion that ensures safety, convenience, and personalization in daily medicine and cosmetic management.

Furthermore, every user interaction is stored in a detailed usage log, enabling the AI engine to study behavior patterns over time. This allows the system to offer personalized suggestions, such as frequently used medicines, upcoming refills, or routine skincare product recommendations. It can also provide insights into usage trends, helping users understand their health habits better. With its blend of IoT-based sensing, machine learning, smart alerts, voice and image recognition, and personalized analytics, the Smart Medical Tray functions as a complete digital health companion. It ensures improved safety, reduces the chances of missed doses, eliminates confusion between similar medicines, and brings a high level of convenience and personalization to everyday medicine and cosmetic management.

Keywords: Smart Medical Tray