

ABSTRACT

Technological advancements have created innovative opportunities to enhance food safety and quality, one of which is through the monitoring of meat freshness. Manual detection methods, which are still commonly used, are often inaccurate and inefficient. To address this issue, E-Sniffer was developed—a Flutter-based mobile application capable of displaying real-time meat freshness detection results through Bluetooth integration with a sensor device. The application displays sensor values for TVOC, H₂S, NH₃, and TMA, which are classified using fuzzy logic into three freshness categories: fresh, slightly spoiled, and spoiled. Testing results show an average system response time of 2.5 seconds and stable Bluetooth connectivity for over 15 minutes within a range of approximately ±10 meters. The application features a simple and user-friendly interface, along with additional functionalities such as detection history. With its reliable performance, this application offers a practical and efficient digital solution for meat freshness detection.

Keywords: E-Sniffer, mobile application, meat freshness, Bluetooth integration, sensor, fuzzy logic, real-time