

ABSTRAK

PENGEMBANGAN SISTEM *INTERNET OF THINGS* BERBASIS WEB LARAVEL UNTUK *MONITORING*, KONTROL OTOMATIS, DAN INTEGRASI PERANGKAT PADA *SMART ROOM*

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Transformasi digital melalui *Internet of Things* (IoT) telah mendorong implementasi sistem *smart room* yang terintegrasi dan cerdas. Namun, sebagian besar sistem masih menghadapi keterbatasan dalam pengelolaan data sensor, kontrol perangkat, dan kemudahan akses antarmuka. Penelitian ini mengembangkan sistem berbasis web Laravel yang berfungsi sebagai pusat monitoring, kontrol otomatis, dan integrasi perangkat IoT dalam lingkungan *smart room* secara *real time*. Sistem dirancang dengan arsitektur modular yang mencakup lapisan *input*, proses, dan *output*. Komunikasi antarmuka dilakukan melalui REST API, memungkinkan data dikirim dan diterima secara sinkron antara perangkat dan *platform* web. *Platform* Laravel dikembangkan untuk menyediakan visualisasi data *real time*, kontrol manual perangkat, otomatisasi berdasarkan parameter lingkungan, serta riwayat log aktivitas dan konsumsi energi. Hasil implementasi menunjukkan bahwa sistem dapat menampilkan data sensor secara akurat dan responsif, menjalankan perintah kontrol perangkat secara andal, serta mendukung otomatisasi cerdas dengan antarmuka web yang intuitif. Integrasi penuh antara *hardware* dan web *backend* menghasilkan sistem yang fleksibel, efisien, dan siap dikembangkan untuk skala yang lebih luas. Platform ini juga membuka peluang pengembangan *smart room* yang lebih adaptif dan hemat energi dengan kontrol terpusat berbasis web.

Kata Kunci: Laravel, *Internet of Things*, *Smart Room*, *Monitoring Real time*.

ABSTRACT

DEVELOPMENT OF A LARAVEL BASED INTERNET OF THINGS SYSTEM FOR MONITORING, AUTOMATIC CONTROL, AND DEVICE INTEGRATION IN A SMART ROOM

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The digital transformation driven by the Internet of Things (IoT) has accelerated the implementation of integrated and intelligent smart room systems. However, many existing systems still face limitations in sensor data management, device control, and intuitive user interface access. This research focuses on the development of a Laravel-based web system that serves as the centralized platform for real-time monitoring, automatic control, and seamless integration of IoT devices within a smart room environment. The system is designed with a modular architecture comprising input, processing, and output layers. Interface communication is conducted via REST API, enabling synchronous data exchange between devices and the web platform. The Laravel platform is developed to provide real-time data visualization, manual device control, environment-based automation, and historical logging of activities and energy consumption. Implementation results show that the system accurately and responsively displays sensor data, reliably executes control commands, and supports intelligent automation through an intuitive web interface. The complete integration between hardware and web backend results in a flexible, efficient, and scalable system. This platform also enables future development of more adaptive and energy-efficient smart rooms with centralized web-based control.

Keywords: *Laravel, Internet of Things, Smart Room, Real time Monitoring.*