Literature Survey Summary: Hostel Management Systems

This summary is based on the uploaded document “Literature Survey on Hostel Management.” It consolidates 20 research works (2020–2025) focusing on automation, AI integration, IoT, and cloud-based hostel management solutions.

1. System Automation and Efficiency
Rajasekar et al. (2024) and Gupta et al. (2022) developed web-based hostel management systems using MERN stack and PHP/MySQL. These systems improved accuracy and reduced manual errors through automation of room allocation, billing, and attendance. Sharma & Tandon (2023) ensured real-time updates but faced scalability challenges.

2. AI and Machine Learning Integration
Bhardwaj et al. (2025) introduced AI-based room allocation using decision trees (92% accuracy). Patil & Khan (2023) used CNNs for image-based complaint verification with 98.2% accuracy. Desai & Jadhav (2025) applied optimization algorithms achieving 98% room fill efficiency.

3. Mobile and Cross-Platform Development
Ahmed et al. (2024) and Reddy & Hasan (2020) developed Flutter/Firebase apps for billing and ticket-based complaint systems. These provided real-time sync but were limited by device dependency and lack of video complaint uploads.

4. Role-Based Access and Security
Smith & Chen (2024) implemented RBAC with OAuth 2.0 and XACML for secure role-based access. Kapse et al. (2024) secured MERN applications, mitigating 95% of OWASP Top 10 vulnerabilities using Helmet.js and bcrypt.

5. IoT and RFID Integration
Khan & Ansari (2023) integrated RFID/IoT systems achieving 99.9% accuracy in mess access tracking. Nair et al. (2020) linked mess and room systems but lacked NGO integration and UI design.

6. Food Surplus and Donation Platforms
Rao & Shetty (2023), MahaLakshmi & Jothiksha (2023), and Bornare et al. (2025) designed food redistribution platforms using AI and cloud computing, achieving 99% success in donor-receiver coordination.

7. Key Technologies
Web: MERN stack, PHP, REST APIs; Mobile: Flutter/Firebase; AI/ML: Decision Trees, CNN; Security: OAuth 2.0, JWT; IoT: RFID, ESP32; Databases: MySQL, MongoDB, PostgreSQL.

8. Common Limitations

Challenges include AI data dependency, limited analytics, complex deployments, reliance on external libraries, and lack of unified dashboards.

9. Conclusion

Overall, these works demonstrate significant progress toward intelligent, automated, and secure hostel ecosystems. Future improvements should focus on unified dashboards, predictive analytics, and enhanced accessibility.

Source: Corrected Literature Survey on Hostel Management (2025).