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| **Abstract:** |  |
| Abstract—This paper presents a low-cost, modular, LDR sensor-based crowd management system. The system utilizes dedicated entry and exit detection modules, each incorporating an LDR–laser setup and LM358 comparator circuits to generate digital count pulses. These pulses are processed by independent controllers driving seven-segment displays for real-time entry and exit counts. A central controller calculates net occupancy, compares it against a user-defined threshold, and triggers the entrance gate to close, currently implemented as an LED indicator when the limit is exceeded. The system was simulated in Proteus with varying crowd flow rates to evaluate accuracy. The results show that the system can count up to three people per second. The entrance gate responds within 445 µs, corresponding to the total measured propagation delay from input trigger to gate activation while consuming only 1.8 W of power. These findings demonstrate the system’s reliability, fast performance, and adaptability for integration with automated gates. Unlike existing high-cost solutions, this design uses simple, low-power components and a dual-controller architecture to maintain accurate counts with minimal processing overhead. The proposed solution is particularly suited for event venues, transport hubs, and other controlled-access environments where real-time crowd regulation is essential. | |