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(57) Abstract :

A system (100) for efficient, secure, and reliable image transmission in a wireless sensor network (WSN) is disclosed. The system (100) comprises sensor nodes equipped with image sensors to capture data, a compression module (104) utilizing wavelet and fractal techniques to reduce image size, and an AES encryption module (105) for secure transmission. The energy-efficient routing protocol (107) employs the Ad-hoc On-Demand Distance Vector (AODV) protocol for dynamic path selection. The system further includes error recovery mechanisms (109) for reliable data delivery and renewable energy sources (108) for extended operational lifetimes. The base station (106) receives, decrypts, and decompresses the image data. The system is designed for minimal energy consumption, optimized transmission, and robust security, making it suitable for real-time image transmission in diverse WSN applications. Dated this day of August, 2025 Dr. Monica Gulati Registrar Lovely Professional University

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