

Urban Wildlife Migration Predictor: An AI IoT System for Real-Time Leopard Movement Forecasting and Alert Management.

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Abstract: *With increasing urbanization, human-wildlife conflict has become a critical concern, particularly in regions where leopards migrate through human settlements. This paper proposes an AI and IoT-based system designed to predict leopard movements in real-time and manage alert dissemination to local communities and authorities.*

By integrating sensor data from GPS collars, camera traps, and environmental sensors with deep learning models, the system forecasts potential leopard migration paths and triggers timely alerts. The system classifies risk levels as low, moderate, or high based on proximity to residential areas, time of day, and historical movement patterns..

A web-based dashboard visualizes predicted routes and sends automated notifications via SMS and mobile apps. Results indicate that the proposed system enhances early warning capabilities, reduces human-leopard encounters, and supports conservation efforts. The system is scalable, cost-effective, and suitable for deployment in wildlife corridors and urban fringe areas.

Keywords: Wildlife Migration Prediction, AI, IoT, Leopard Tracking, Real-Time Alerts, Human-Wildlife Conflict

