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My research focuses on leveraging Remote Sensing, GIS, and IoT-enabled technologies to analyze, monitor, and model complex environmental, agricultural, and urban systems. I specialize in time-series analysis of remote sensing data to monitor environmental and geospatial changes over time, including seasonal vegetation patterns, land cover dynamics, ecosystem health, and natural hazards such as floods, earthquakes, and extreme weather events. By integrating multi-temporal satellite imagery, high-resolution UAV/drone data, and IoT sensor networks, I aim to generate precise spatial and temporal information for agricultural productivity, crop phenology, wetland and biodiversity monitoring, and urban infrastructure planning.

A major component of my work involves applying machine learning and AI-driven spatial modeling to large geospatial datasets, enabling predictive insights into environmental trends, vegetation dynamics, and hazard assessment. I also develop Geospatial Digital Twins and 3D urban/environmental models, combining GIS, Remote Sensing, and IoT data to support smart infrastructure, resource management, and sustainable urban planning.

Another critical aspect of my research is disaster risk assessment and early warning systems, leveraging satellite, UAV, and IoT sensor data for real-time monitoring, predictive alerts, and mitigation strategies. Additionally, I focus on designing spatial decision support systems that integrate environmental, agricultural, and urban data to guide evidence-based policy-making and sustainable development initiatives.

Overall, my research bridges technology and application, combining Remote Sensing, GIS, IoT, and AI to deliver practical, data-driven solutions for resilient ecosystems, productive agricultural landscapes, and sustainable urban environments. By focusing on time-series remote sensing analysis, multi-source geospatial integration, and real-time monitoring through IoT, I aim to contribute to innovative, actionable, and policy-relevant geospatial science that addresses real-world environmental and societal challenges.

Portfolio: www.khademali.com