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Crisis Map: Revolutionizing Emergency Response with Predictive Analytics & AI

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Natural disasters occur more frequently and intensely and impact predominantly vulnerable and under-resourced communities. Crisis Map suggests an end-to-end real-time, privacy respecting platform based on federated data mesh architecture and predictive artificial intelligence models for better disaster response and resource deployment.

With the integration of satellite imageries, public communication channels and IoT sensor data, Crisis Map applies the use of Graph Neural Network and ConvLSTM(Convolution Long Short Term Memory) for forecasting disaster impact locations and relief requirements. With cross agency partnerships enabled under federated learning, ensured compliance with territorial sovereignty, HIPAA, and CCPA is guaranteed. Simulation results confirm up to 88% accuracy in prediction, 40% reduced response time, and 30% equitable distribution of supplies.

This poster showcases the system architecture, key results in simulation, and its potential for scaling disaster resilience worldwide, putting data governance, equity, and regional adaptability as priority.

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