Agentic AI Hackathon: Building Intelligent Agents with IBM Granite and Lang Flow

Problem Statement 1: AI-Based Traffic Congestion Monitoring and Alert System

The Challenges

Urban traffic congestion is influenced by dynamic factors such as vehicle density, peak-hour demand, road incidents, and weather conditions. Traffic management systems collect large volumes of real-time and historical traffic data, but continuous manual analysis is infeasible. This results in delayed identification of congestion buildup and reactive traffic management. There is a need for an intelligent assistive system that can continuously analyze traffic data and identify congestion risks at an early stage.

Traffic Data Analysis Agent

An agent that ingests real-time and historical traffic data including vehicle speed, traffic volume, road occupancy, and incident reports, and organizes them into interpretable traffic trends.

Congestion Trend Detection Agent

An agent that analyzes short-term and long-term traffic patterns to detect abnormal slowdowns, bottlenecks, and congestion formation using historical baselines and threshold-based rules.

Alert & Traffic Advisory Assistant

An agent that generates early congestion alerts and provides route-level traffic advisories (assistive only, non-enforcement).

Outcome

Enable early detection of congestion patterns, improve situational awareness, and supports proactive traffic management.

Mandatory Tech Stack

Lang Flow using IBM Granite Model
(Using RAG on traffic management guidelines, congestion thresholds, and trusted transportation references.)