**Transportation network perimeter identification**

Lap : CRML

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**Introduction:**With the rapid growth of urban areas, the need to identify key zones of activity within large cities has become a priority. Understanding where people concentrate or areas with high activity can help optimize infrastructure, improve traffic flow, and create safer, more vibrant environments.  
This project aims to identify and visualize high-interest zones within urban areas setting by combining advanced heatmap analysis, clustering algorithms, and reinforcement learning techniques. This approach not only highlights critical areas but also reduces computational overhead by efficiently clustering intersection points.  
By leveraging geospatial data and visual heatmaps, this project offers actionable insights that can guide urban planning decisions, optimize traffic flow.  
This paper outlines the methodology, tools, and findings of the project, starting from data operation to the generation of heatmaps and clustering of intersections

**Background:**Urban Analysis: Urban analysis is the study of city structures, dynamics, and interactions to better understand how urban areas function and evolve. By leveraging data from sources, urban analysis helps uncover patterns in mobility, population density, and infrastructure usage. This understanding enables city planners, policymakers, and businesses to optimize resources, improve traffic flow, and enhance urban livability. Modern urban analysis often relies on advanced tools like heatmaps, clustering algorithms, and machine learning to visualize and process complex data, making it a critical component in shaping smarter and more sustainable cities.  
Heatmap: A heatmap is a powerful visualization tool that represents data density or intensity across a geographical area using color gradients. In urban analysis, heatmaps highlight zones with varying levels of activity, such as traffic congestion, population density, or resource utilization. Typically, warmer colors indicate areas of high intensity, while cooler colors signify lower activity. By mapping data points like speed ratios or intersection densities, heatmaps help uncover hidden patterns, enabling stakeholders to identify hotspots, optimize urban planning, and improve decision-making in large cities.  
Algorithm and workflow design:

**Methodology:**

**Data Source:**

**Technological Framework:**

**Analysis and Findings:**

**Visualization and Results:**

**Challenges and Limitation:**

**Conclusion:**

**References:**