

CS221 Lab OEL Proposal

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In a growing urban city, managing emergency services (e.g., ambulances, fire trucks, and police cars) efficiently is a critical challenge. Delays in response times can lead to severe consequences. The goal is to design and implement a system to optimize emergency vehicle dispatch based on the shortest response time, resource availability, and traffic conditions.

**Proposed Solution: Emergency Response Management System:**

We will use the following concepts to create our response system:

* Linked Lists:

Maintain a dynamic list of ongoing emergencies, including details such as location, severity, and status.

Use doubly linked lists to allow efficient traversal and updates of active incidents.

* Graph Algorithms

Model the city as a graph with intersections as nodes and roads as edges.

Use Dijkstra’s algorithm to calculate the shortest path for dispatching emergency vehicles.

* Sorting and Searching

Use quicksort or mergesort to sort incidents by priority (e.g., life-threatening emergencies first).

Use binary search to quickly find specific resources or emergency types.