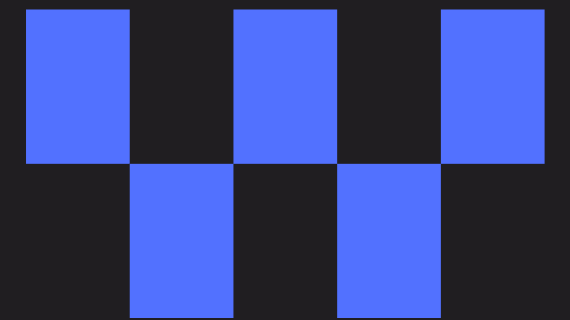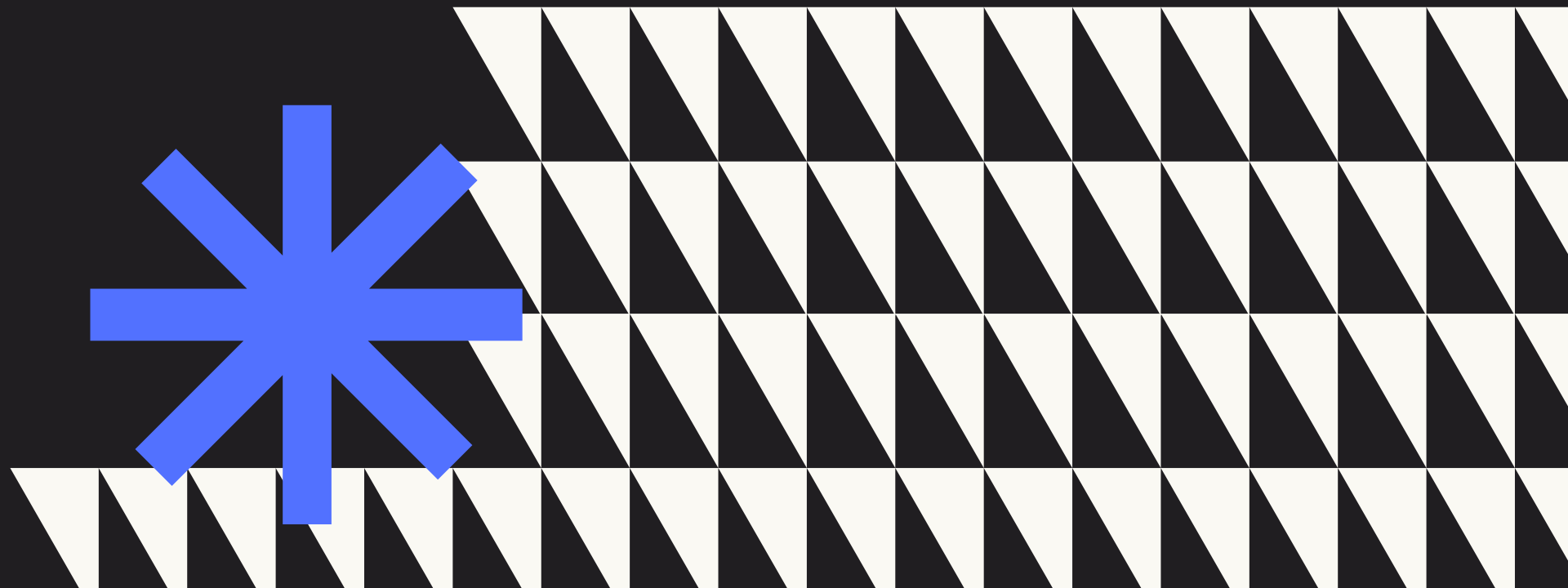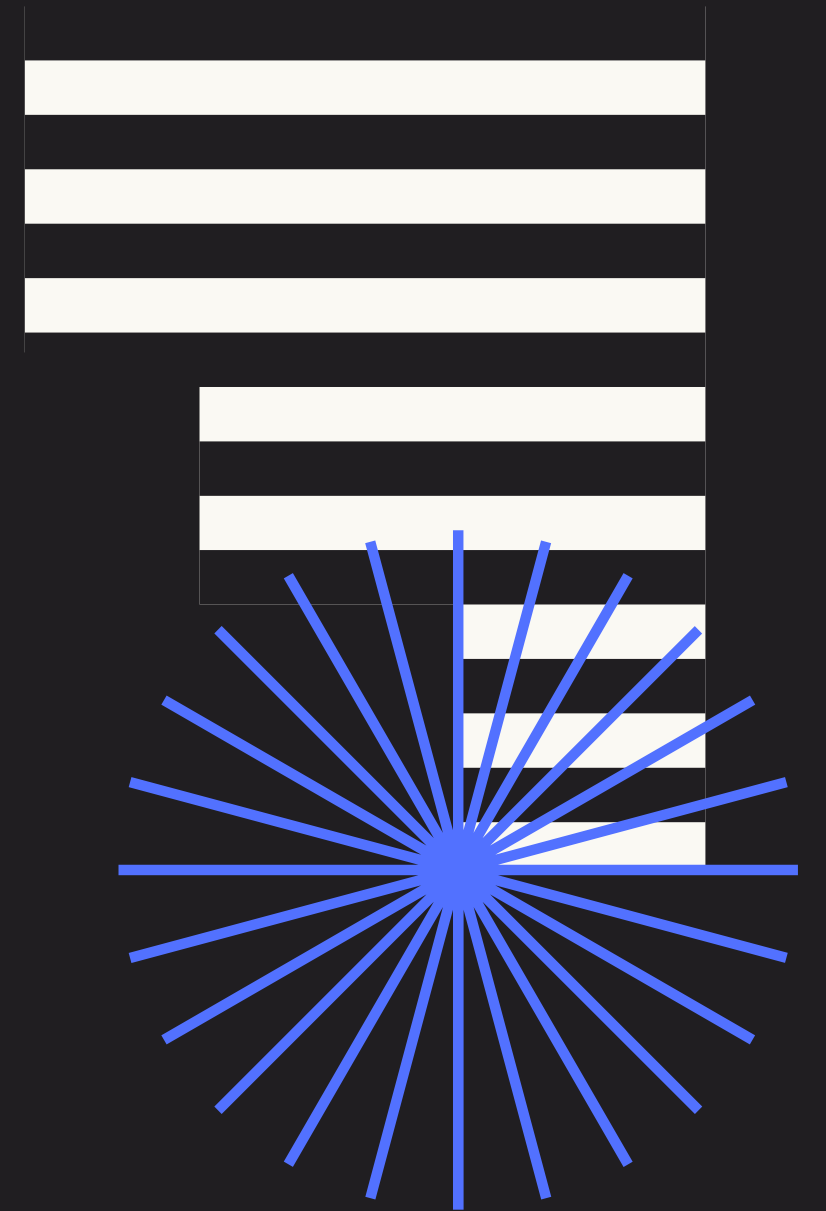# Multi-Agent System for Smart Traffic Management

Tejaswi Erattu

SeattleData AI & Security
Speed Hackathon

Static traffic systems cause congestion—AI agents can manage traffic dynamically in real time.

What can we do to improve congestion?
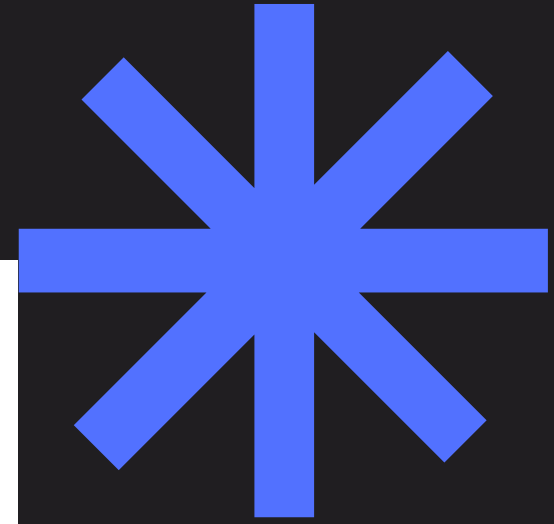
Artificial Intelligence Powered Traffic lights

Check Emrgency

Detects emergency vehicles in real time
Gives Priority to ambulances and fire trucks.
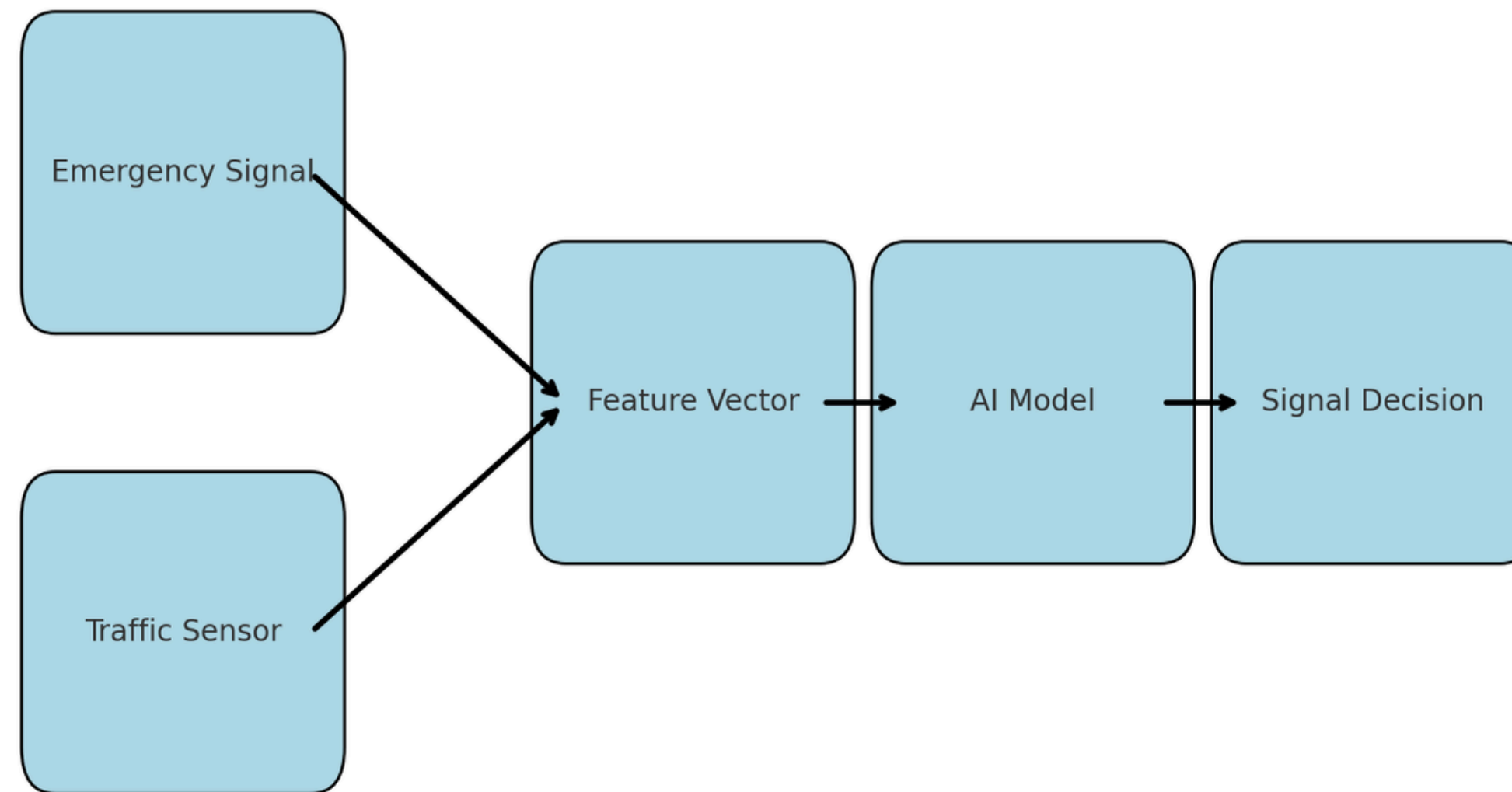Over rides standard flow for emergencies.

Check Traffic

Monitors vehicle queue at the intersection
Adjusts signal timing based on traffic density
Prevents congestion with smart timing

Visual Demonstration

AI Traffic Light Decision Flow

Demo

Features:
- Real - Time Signal Control
- Emergency Vehicle Prioritization
- Modular Muli-Agent Design

```
[Intersection-2] State: YELLOW | Queue: 3 | Emergency: False | Time: 12:41:17
C:\Users\taj_t\.vscode\smart-traffic-hackathon-tj\venv\Lib\site-packages\sklearn\utils\validation.py:2739: UserWar
ning: X does not have valid feature names, but DecisionTreeClassifier was fitted with feature names
  warnings.warn(
[Intersection-0] State: YELLOW | Queue: 5 | Emergency: False | Time: 12:41:17
C:\Users\taj_t\.vscode\smart-traffic-hackathon-tj\venv\Lib\site-packages\sklearn\utils\validation.py:2739: UserWar
ning: X does not have valid feature names, but DecisionTreeClassifier was fitted with feature names
  warnings.warn(
[Intersection-1] State: YELLOW | Queue: 4 | Emergency: False | Time: 12:41:19
C:\Users\taj_t\.vscode\smart-traffic-hackathon-tj\venv\Lib\site-packages\sklearn\utils\validation.py:2739: UserWar
ning: X does not have valid feature names, but DecisionTreeClassifier was fitted with feature names
  warnings.warn(
[Intersection-2] State: RED | Queue: 2 | Emergency: False | Time: 12:41:19
C:\Users\taj_t\.vscode\smart-traffic-hackathon-tj\venv\Lib\site-packages\sklearn\utils\validation.py:2739: UserWar
ning: X does not have valid feature names, but DecisionTreeClassifier was fitted with feature names
  warnings.warn(
```

Future Enhancements

Traffic Estimation

Can estimate traffic and optimize travel plans hours before drive. If more people avoid high traffic areas, it will disperse traffic.

Accident Reporting

Car cameras see accidents and report them instead of user manually needing to report them.