Enhancing AMBER Alert using Collaborative Edges

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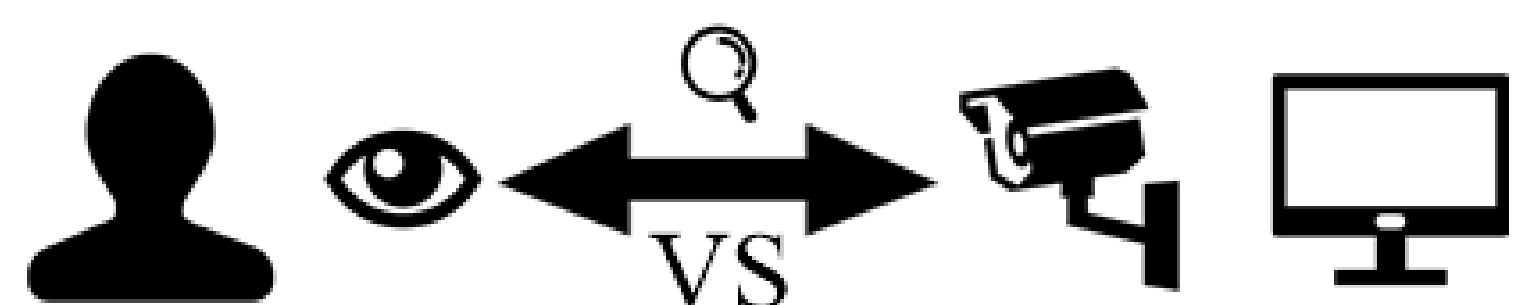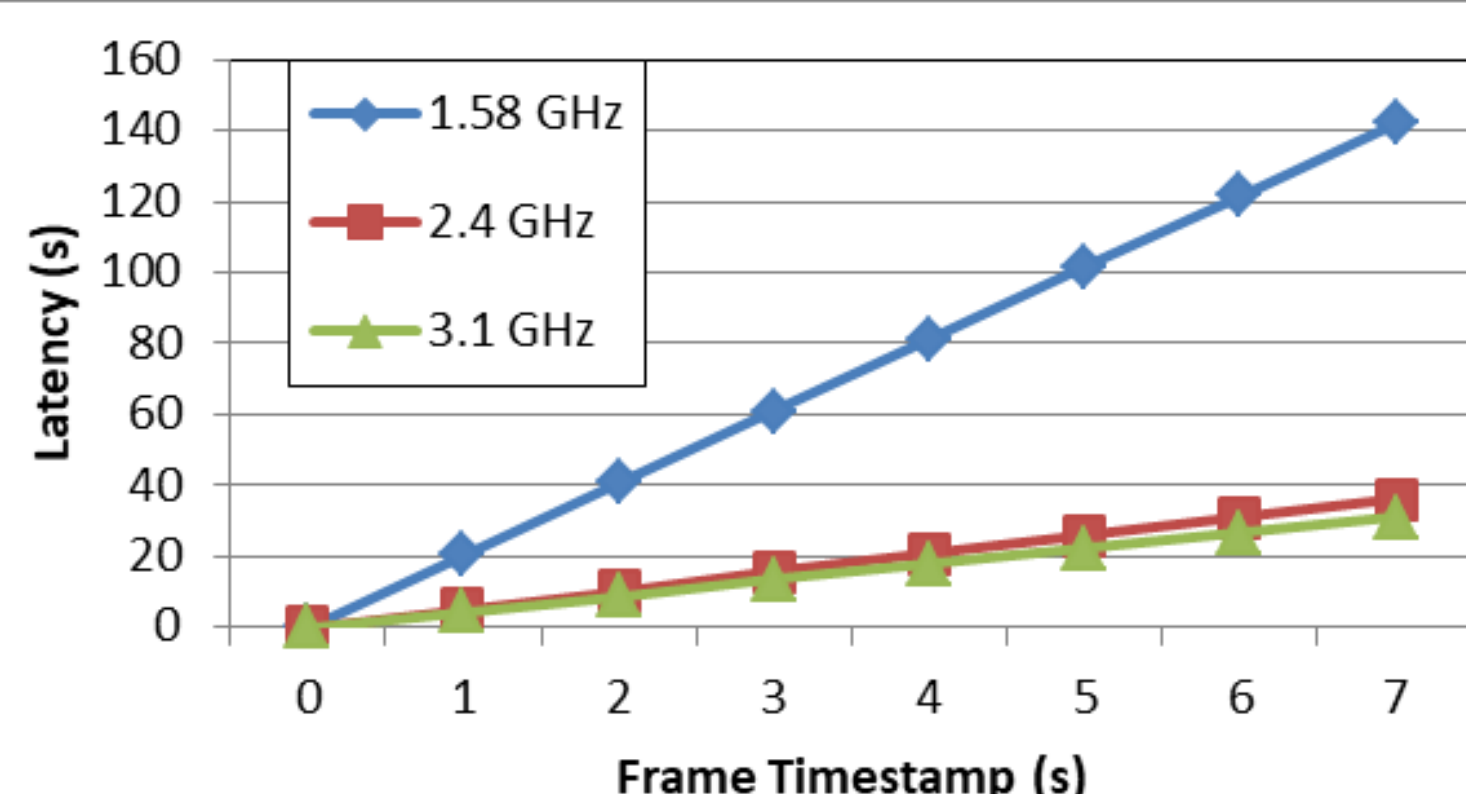[1]Wayne State University, USA; [2]Anhui University, China

AMBER Alert

❖ **Distributed:**
  Radio stations, cable TV, emergency alert system, and so on.
❖ **Information:**
  Time, location, characteristics for kid and kidnapper, license number.
❖ **Searching:**
  Reports of witnesses.
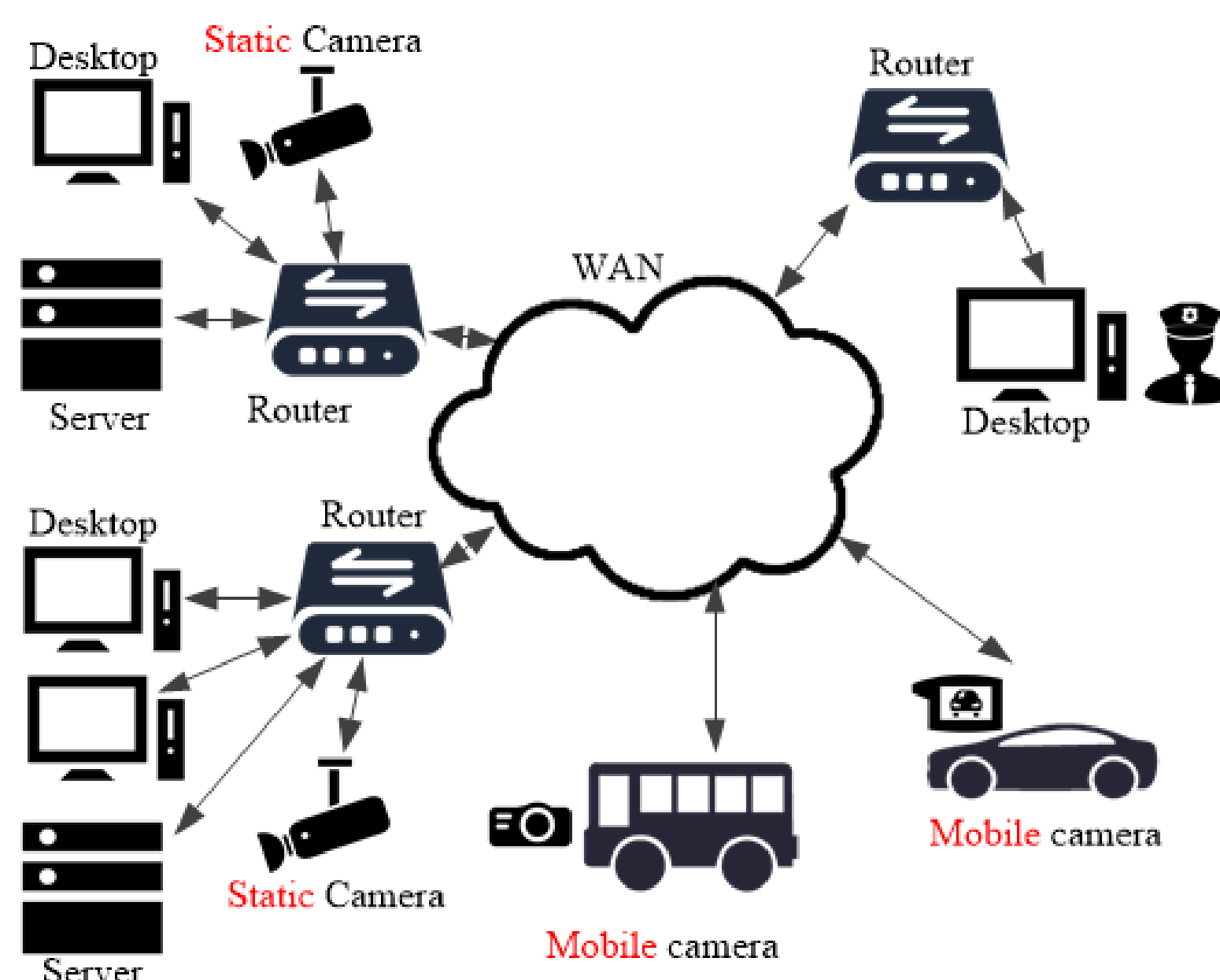
Motivations

❖ **Manual vs. automated:**

❖ **Bandwidth and latency**
  Requested by data uploading.
  Solution: **Edge Video Analytics**
❖ **Real time vehicle tracking**
  Limited by computing capability and tracking area manager.

Collaboration of edge nodes

A3: AMBER Alert Assistant

An **automating** kidnapper vehicle tracking **application** via edge video analytics and collaborative edges.
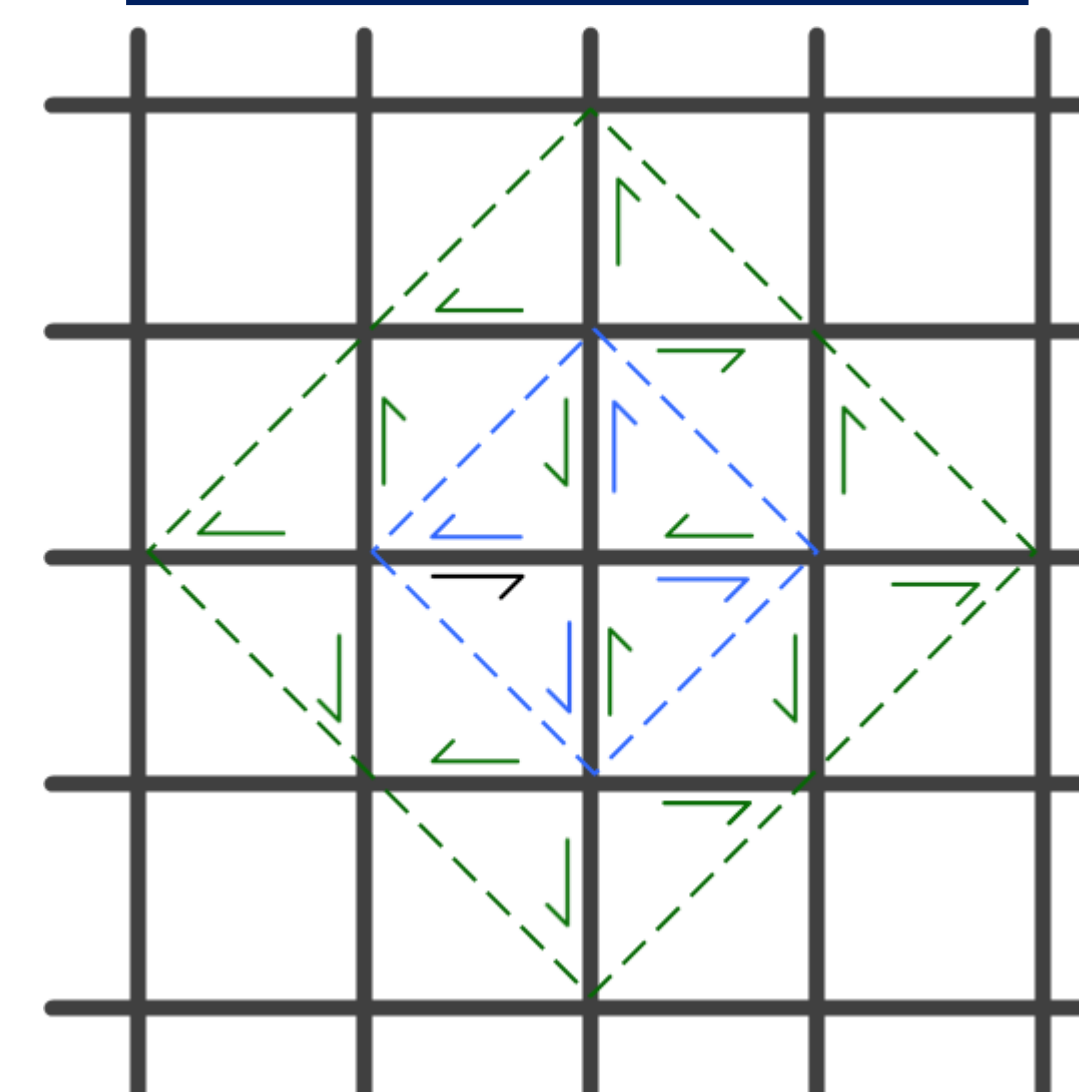

Entities

- Control Center
- Job Receiver
- Data Processer

It works

❖ **Real-time video analytics**
Job Receiver will **collaboratively** analyze the video data with *Data Processors* connected with the same router.
❖ **Controlling of tracking area**
Job will be transferred between *Job Receivers*.
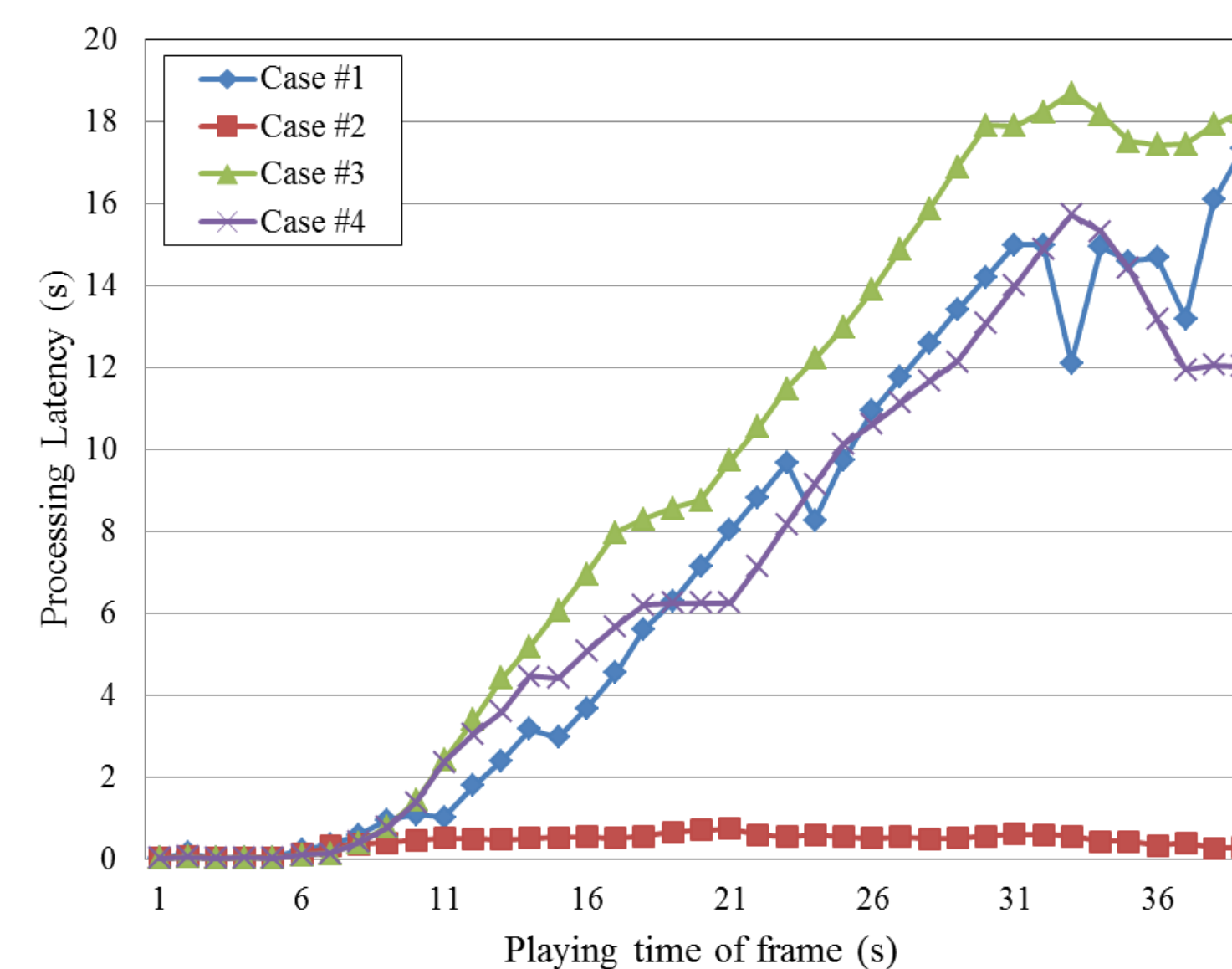
Tracking algorithm

Distance-related diffusion

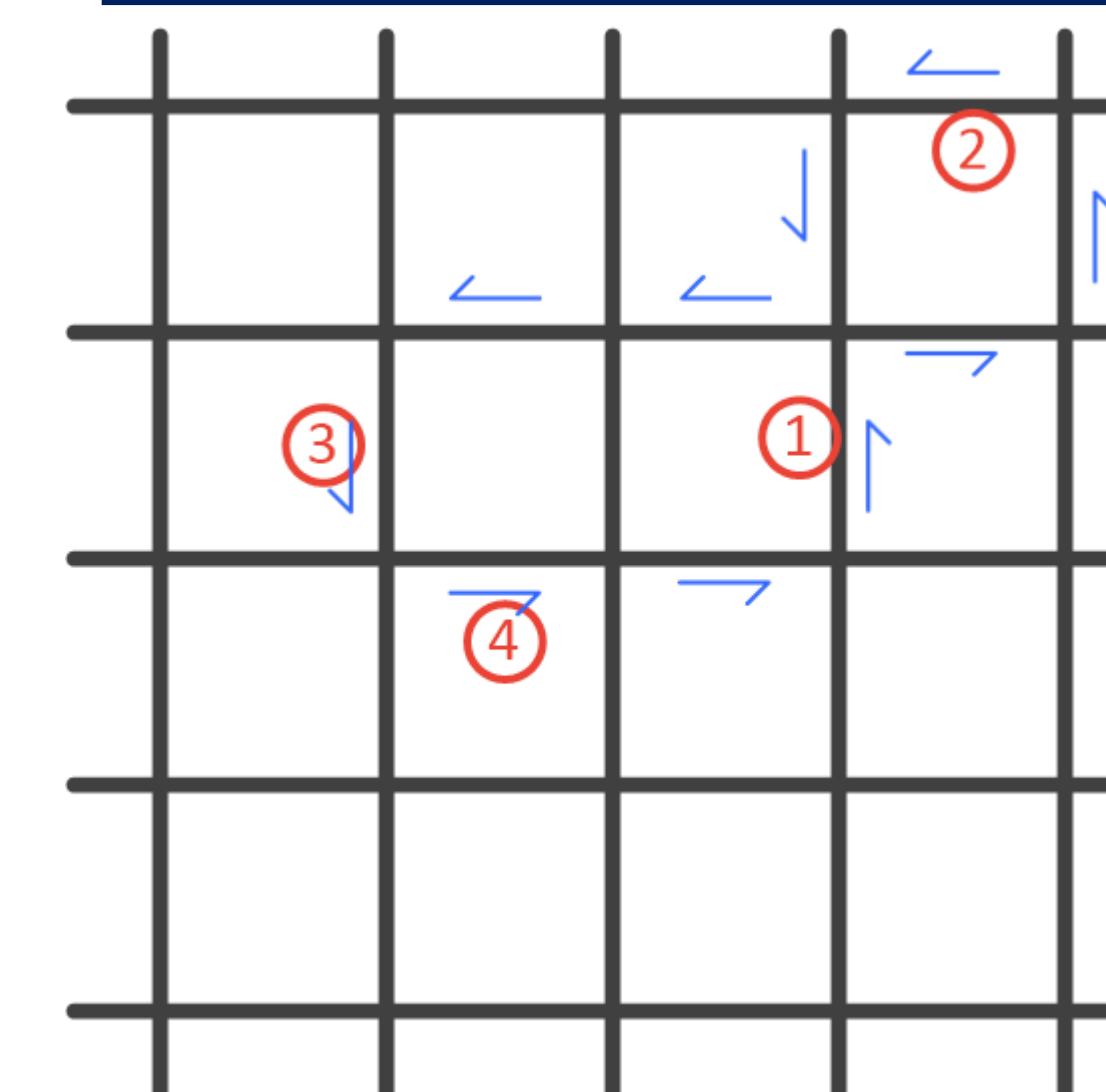The tracking area radius increases by a fixed number as the time goes.

Location-direction-guided diffusion

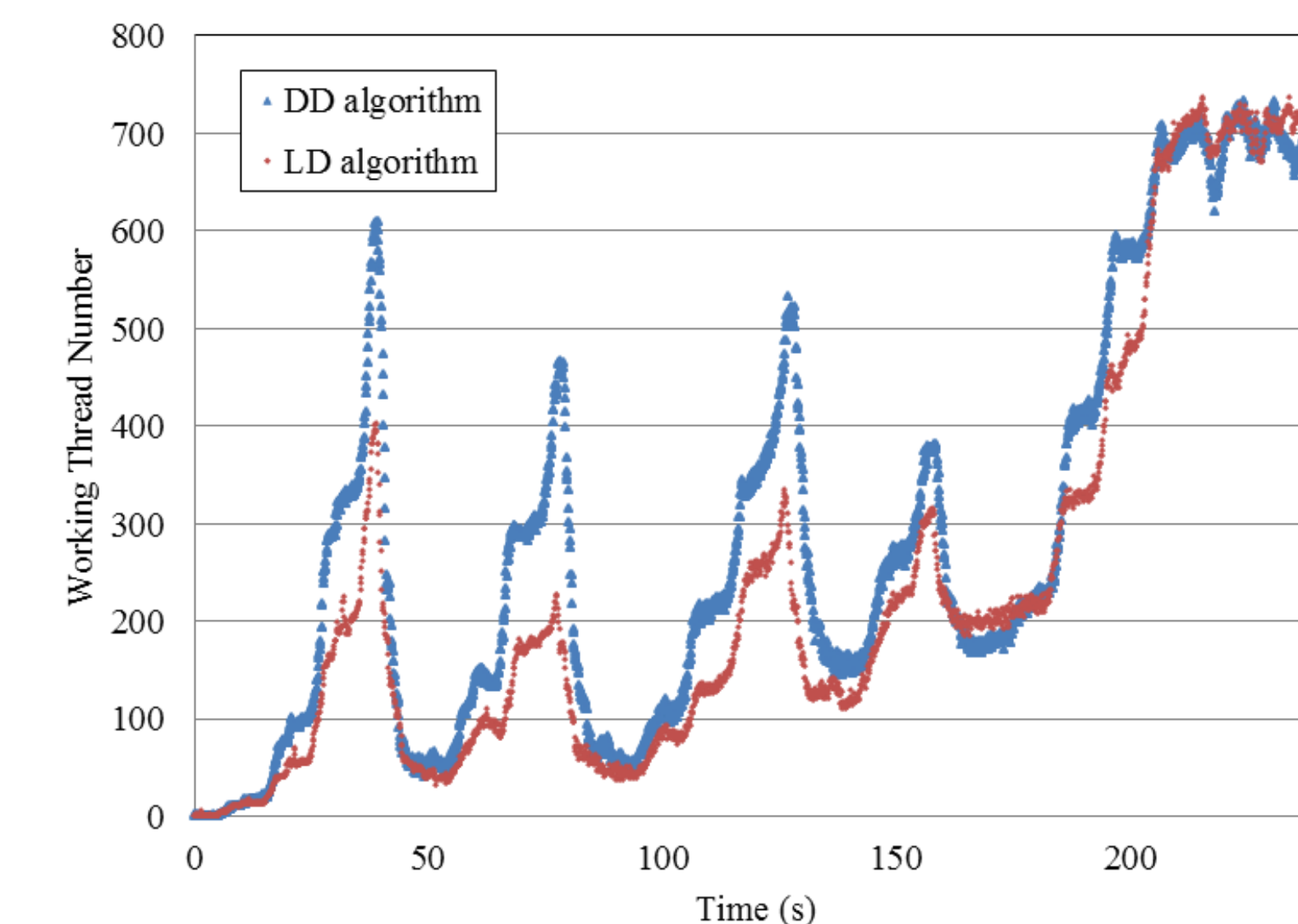The tracking job diffuses according to the road topology and limitation, e.g., the speed of the road.

Collaboration of local edge nodes

Demonstration of A3

The targeted vehicle will appear at the red point one by one.

Conclusion

❖ **Real time** video analytics
❖ **Effective** for tracking vehicle
❖ **Flexible** for **customized** algorithm