Agent-Based Reactive Geographic Routing Protocol for Internet of Vehicles

EL7044

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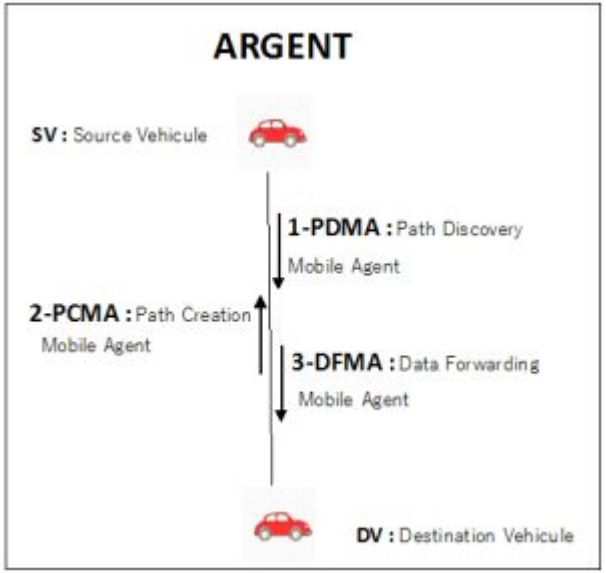
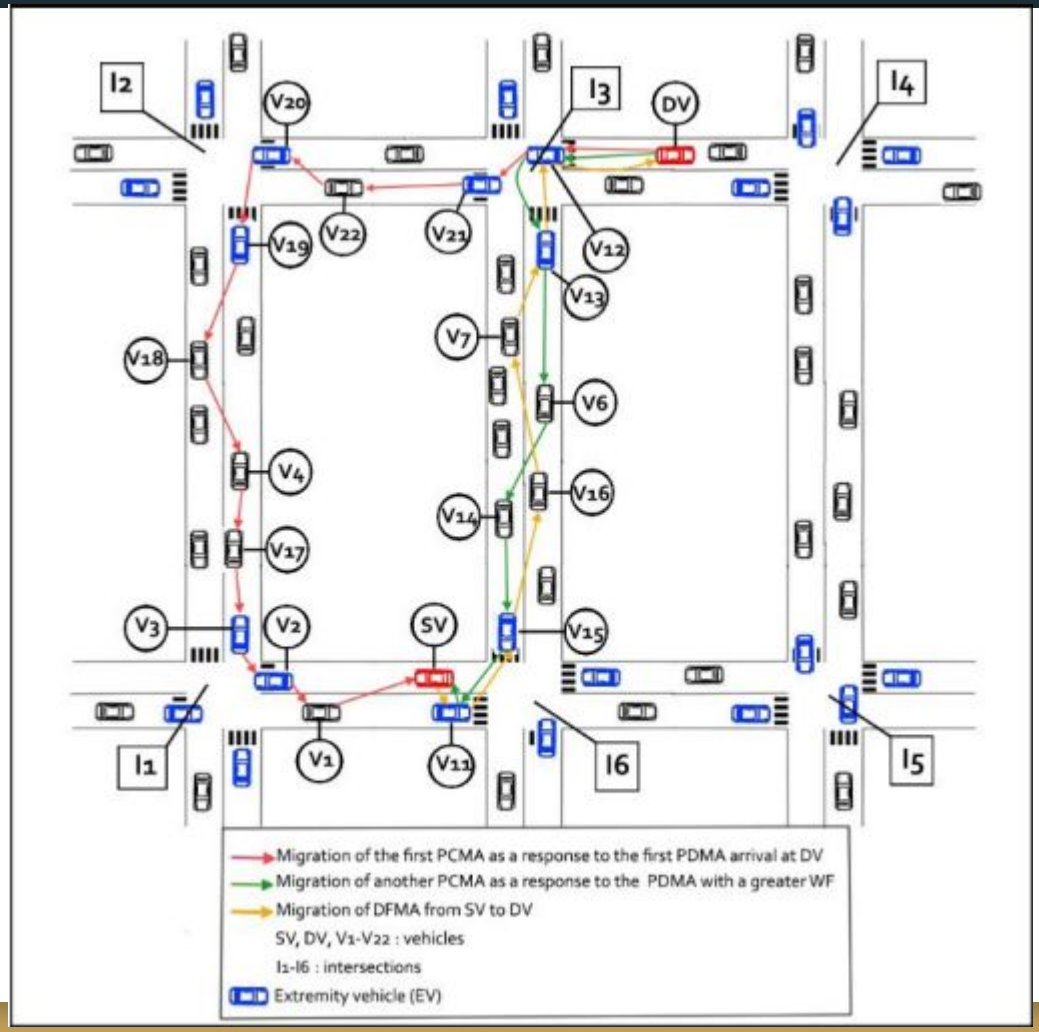
ARGENT Agents



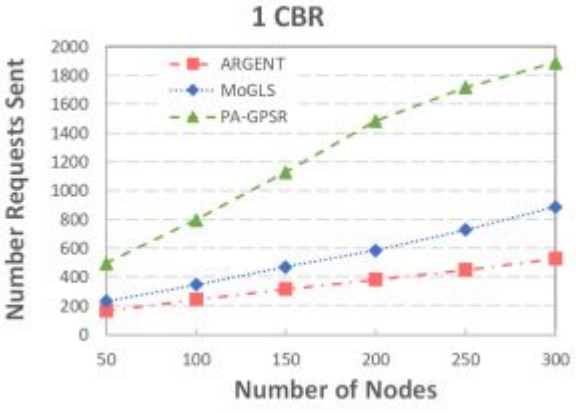
- VMSA is a stationary agent that resides in each vehicle
- First step in routing process is tries to find wide segment the destination is located in (PDMA)
- Then the PDMA reaches the destination vehicle, the PCMA is created and sent back to the source vehicle
- After receiving the routing information from PCMA the sources creates a DFMA

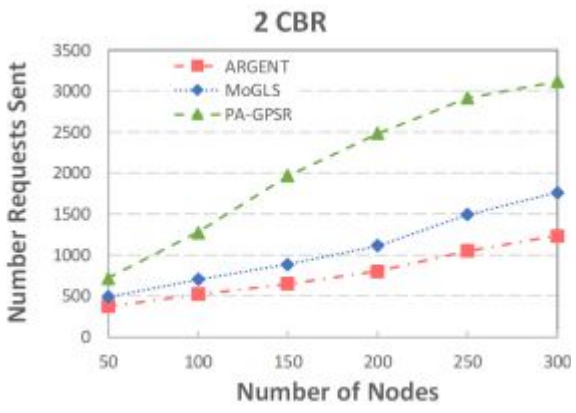


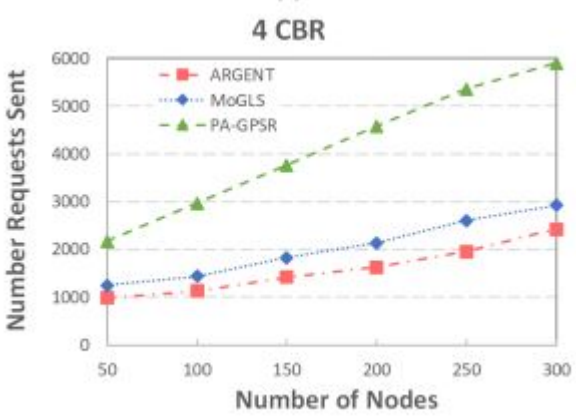
- PCMA removes all the edges that it marked as out-of-service and applies the Dijkstra algorithm to find the shortest geographical paths.

NUMBER OF SENT LOCATION REQUESTS

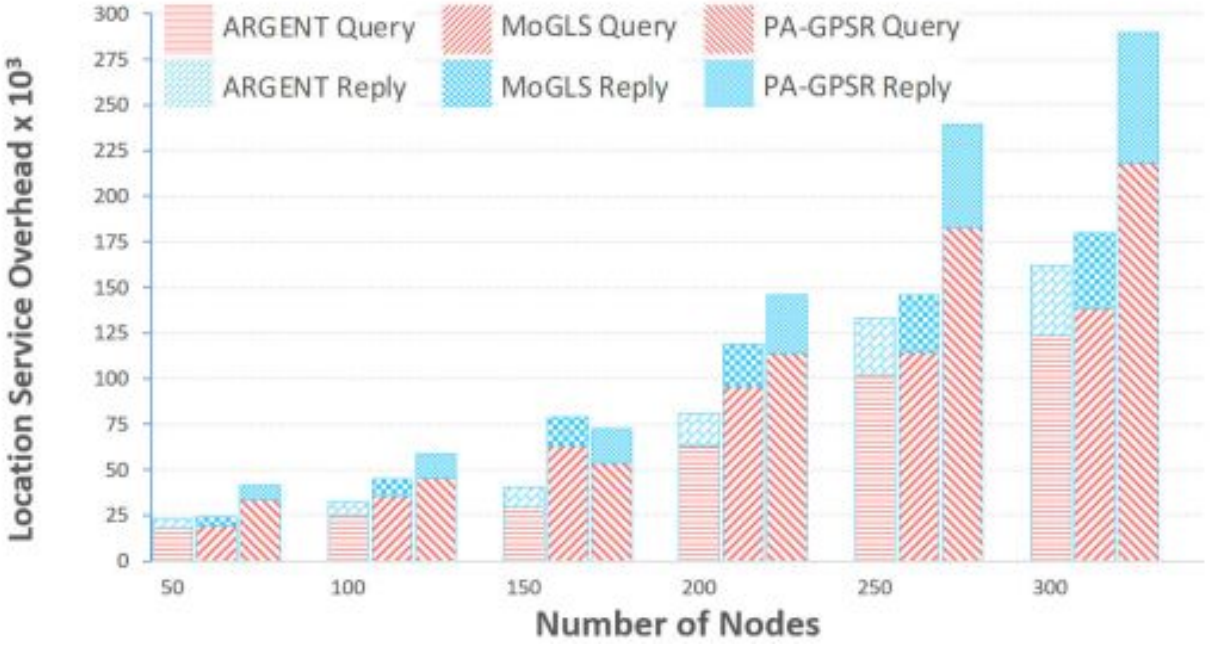
ARGENT reduces the number of location requests sent for the different numbers of CBR connections.





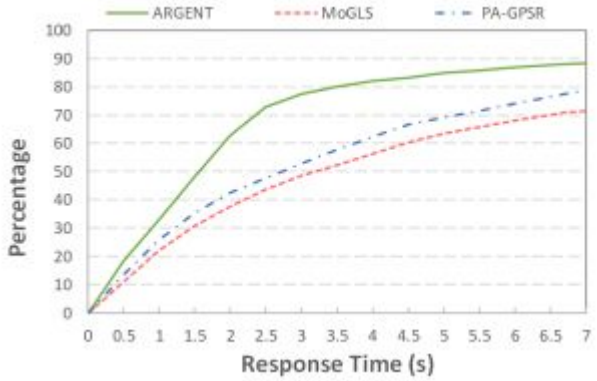


LOCATION OVERHEAD



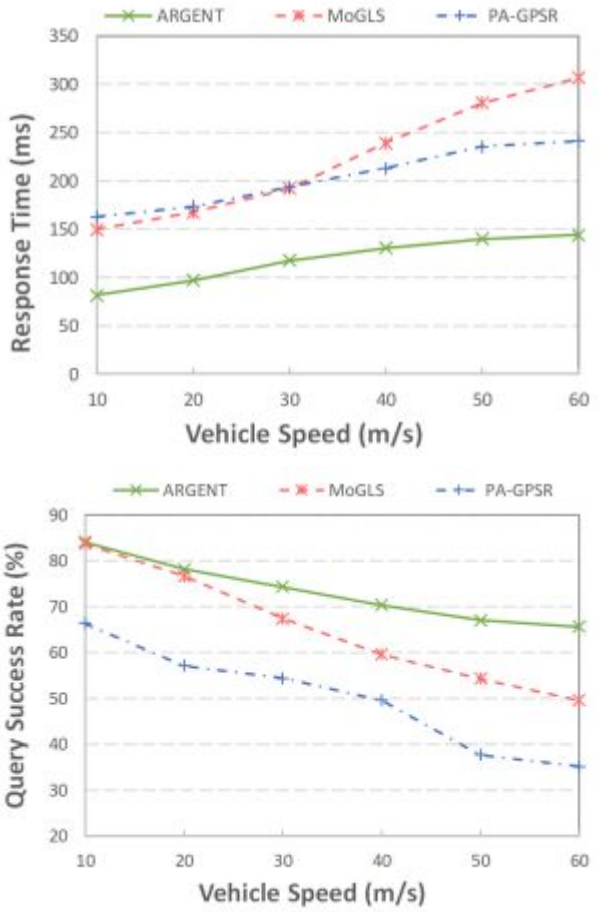
LOCATION RESPONSE TIME (LRT)

- The processes of internal and external agent migration speed up the location request and reply in ARGENT
- Enable the source to receive the destination's location much faster than traditional location request/reply



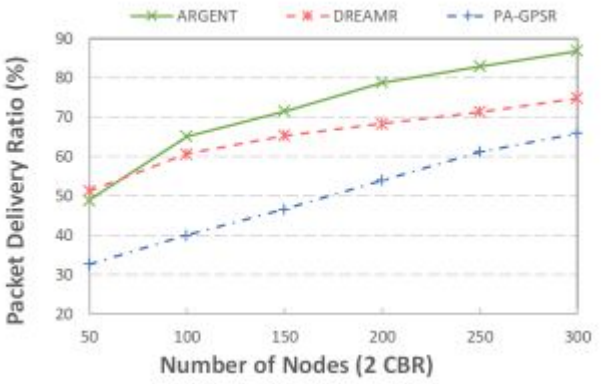
VEHICLES' SPEED

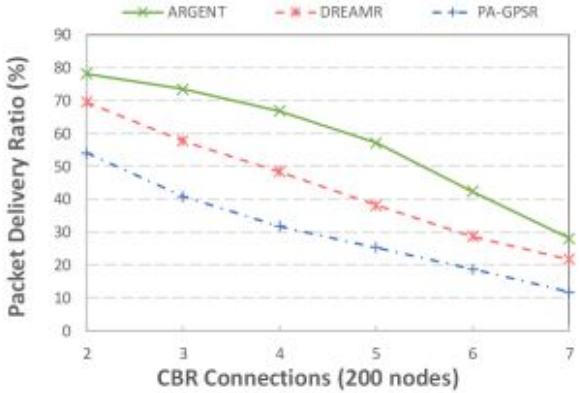
- As the average speed of vehicles increases, the disconnectivity rate between them increases
- Higher speed makes the average connection time between two vehicles shorter
- ARGENT is less affected by high speeds



PACKET DELIVERY RATIO (I

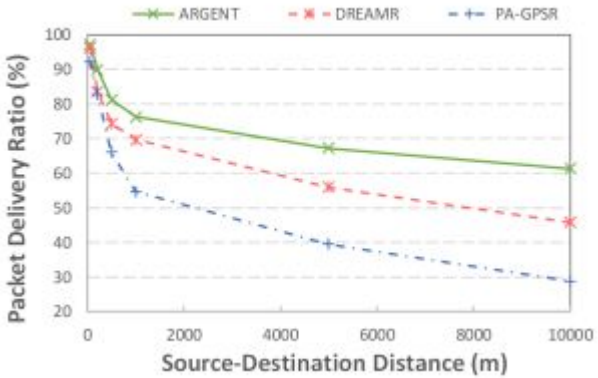
- ARGENT has a higher PDR than PA-GPSR for the different values of vehicle density
- PDR is reduced at higher network densities due to the availability of more routing paths, which mitigates the effect of the control traffic overhead

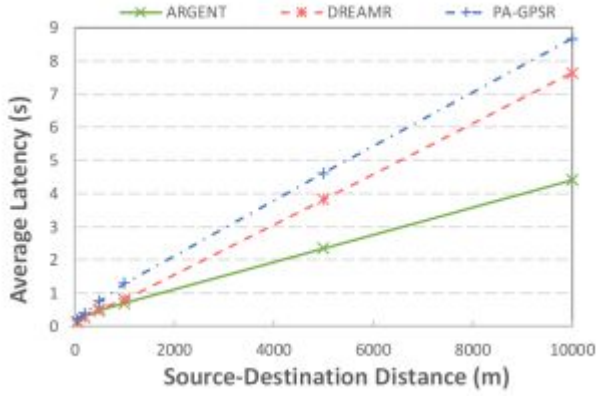




VARYING THE SOURCE-TO-DESTINATION (S-D) DISTANCE

- PDRs of the three protocols decrease as the S-D Distance increases
- ARGENT has a higher ability to deliver packets successfully to distant destinations
- As the S-D Distance increases, the CBR latencies of PA-GPSR and DREAMR increase much more than the latency of ARGENT





CONCLUSION

- The multiagent-based approach integrates static and mobile agents in order to provide more adaptability, flexibility, and personalization of routing services within IoV environments
- For the future will studying the security of ARGENT exchanged messages.
- Will exploring the effect of varying the routing path caching time on the protocol performance.