A Decision Theoretic (DT) Graduate Student Project:

Driving on a one-lane Country road

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June 2010

Imagine driving along a long stretch of two-lane country road. Other drivers enter and leave from side roads at random. Assume we cannot overtake slower drivers. Speed limits abruptly change by posted signs. There are randomly placed local law enforcement radar equipped cameras that can record speeds that over 10 miles the posted, local limits. Assume 55mph is the maximum speed possible. Our speeds can be checked from either lane. We are aware of speeds of other vehicles. To avoid collision with the vehicle ahead, we must be 10 miles slower than it. The problem is choosing speeds from the set {10, 20, 30, 40, 50} plus up to 9 miles. There are a few configuration states possible. 1) leader: there is no one ahead of us. 2) follower: There is no one behind us. 3) Convoy: There are cars ahead and behind us. If we want to minimize travel time, are there useful strategies such drive as fast as possible.

References

Sven Ove Hansson, 1994. Decision Theory: An Introduction, Royal Institute of Technology, Stockholm

Approach:

1. Use DT to formulate the problem.

2. Use MAS testbeds like netlogo to simulate a prototype.