

Traffic Optimization in Transportation and Logistics Networks

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Abstract:

Many important problems in communication networks, transportation networks, and logistics networks can be solved by the minimization of cost functions. In general, these can be complex optimization problems involving many variables. I will discuss the use of message-passing algorithms and other techniques in applications such as bandwidth allocation, facility location, traffic routing, load shedding and stability enhancement. Compared with centralized algorithms, distributed algorithms such as message-passing have the advantages of lower computational complexity, and lower communication overhead. Since they have a faster response to local changes of the environment, they are especially useful for networks with evolving conditions.

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