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RESEARCH ARTICLE

TRACKING AND ACTIVITY RECOGNITION THROUGH CAMERA NETWORKS

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Abstract— We consider the agreement problem over random information networks. In a random network, the existence of an information channel between a pair of unit sat each time instance is probability and independent of other channels; hence, the topology of the network varies over time. In such a frame work, we address the asymptotic agreement for the networked units via notions from stochastic stability. Furthermore, we delineate on the rate of convergence as it relates to the algebraic connectivity of random graphs. In many applications, this is prohibitively expensive, both technically and economically. In this paper, we investigate distributed scene analysis algorithms by leveraging upon concepts of consensus that have been studied in the context of multi-agent systems, but have had little applications in video analysis. Each camera estimates certain parameters based on its own sensed data which is then shared locally with the neighboring cameras in an iterative fashion, and a final estimate is arrived at in the network using consensus algorithms. We specifically focus on two basic problems - tracking and activity recognition. For multi-target tracking in a distributed camera network, we show how the Kalman-Consensus algorithm can be adapted to take into account the directional nature of video sensors and the network topology.

Full Text: http://www.ijcsmc.com/docs/papers/September2013/V2I9201346.pdf