Maximizing Coverage with Mobile Crime Cameras in a Stochastic Spatiotemporal Bipartite Network

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Abstract : This research details a coverage measure for evaluating the effectiveness of observer node placements in a spatial bipartite network. This coverage measure can be used to optimize the configuration of stationary or mobile spatially oriented observer nodes, or a hybrid of the two, over time in order to fully utilize their capabilities. To demonstrate the practical application of this approach, we construct a SpatioTemporal Bipartite Network (STBN) using real-time crime center (RTCC) camera nodes and NOPD calls for service (CFS) event nodes from New Orleans, La (NOLA). We use the coverage measure to identify optimal placements for moving mobile RTCC camera vans to improve coverage of vulnerable areas based on temporal patterns.

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