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TRACKING VEHICLE IN GSM NETWORK TO SUPPORT INTELLIGENT TRANSPORTATION SYSTEMS

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Abstract. The penetration of GSM capable devices is very high, especially in Europe. To exploit the potential of turning these mobile devices into dynamic data acquisition nodes that provides valuable data for Intelligent Transportation Systems (ITS), position information is needed. The paper describes the basic operation principles of the GSM system and provides an overview on the existing methods for deriving location data in the network. A novel positioning solution is presented that rely on handover (HO) zone measurements; the zone geometry properties are also discussed. A new concept of HO zone sequence recognition is introduced that involves application of Probabilistic Deterministic Finite State Automata (PDFA). Both the potential commercial applications and the use of the derived position data in ITS is discussed for tracking vehicles and monitoring traffic flow. As a practical cutting edge example, the integration possibility of the technology in the SafeTRIP platform (developed in an EC FP7 project) is presented.

[Conference Paper](#) (PDF, 1282 KB)

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