



Wireless Engineering Research and Education Center

Mobility Prediction and Resource Utilization in Wireless Networks

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Abstract

User mobility influences the performance seen by a mobile device in a wireless network. Knowledge of mobility patterns can be exploited to properly allocate network resources and enhance the performance and quality of service experienced by a mobile device for applications and services. Hence, mobility prediction plays an important role in the efficient operation of wireless networks such as WANs and WLANs. Access to mobility related information such as user movement provides an opportunity for networks to efficiently manage resources to satisfy user needs. Towards this goal, a generic framework based on a prediction is proposed. The effectiveness of the approach using a prediction engine based on Hidden Markov Model (HMM) is investigated. This prediction is used by the network to perform efficient allocation of network resources to applications. The above framework is quite general and the HMM based engine can be replaced by other suitable models such as neural networks or ARMA. Simulation results for the HMM based model illustrate the effectiveness of the approach.

Bio

Pratap S Prasad is a graduate student in the Department of Electrical and Computer Engineering at Auburn University. He received his M.S degree from the same department in 2006 and is currently pursuing a doctoral degree under the supervision of Prof. Prathima Agrawal. His research interests include mobility prediction, mobility modeling, network routing algorithms and sensor and mesh networks.

FRIDAY, OCTOBER 9, 2009, 3:00 P.M.
235 BROUN HALL