

Public Abstract

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Mobile Speed Estimation for Hierarchical Wireless Network

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Hierarchical cellular structure can effectively reduce the number of handoffs in mobile wireless communication system, thus significantly improve the overall system capacity. The implementation of hierarchical cellular system requires the knowledge of mobile user speed at the base station. This thesis focuses on the development of a mobile speed estimation algorithm for practical wireless information system. The algorithm is developed based on the statistical properties of the wireless propagation environment, and it can efficiently classify all the mobile users into two categories: low-speed user and high-speed users. The obtained information will be used for cell assignment in hierarchical cellular systems. Both computer simulation and theoretical analysis show that the proposed mobile speed estimation algorithm is reliable, efficient, and it can be employed in a wide range of wireless communication system with diverse wireless environments.