A Dual Channel Location Estimation System for Mobile Computing

CHAN Ka Chun

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Principal Supervisor: Dr. Joseph Kee-Yin, NG
Hong Kong Baptist University
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Abstract

A dual channel system, which is based on the GPS and the GSM Network, is being investigated to compensate the problem of the lost of GPS signals in providing location services to the mobile users in urban areas. In this design, GSM positioning algorithms will be used as an alternative method to provide location estimations, when GPS signal is lost in blind spot areas. Although GSM positioning algorithms based on signal attenuation may not be the most promising approach for providing location estimation, signal strength however is the only common attribute available among various kind of mobile network. Together with the fact that tall buildings are populated in metropolitan areas like Hong Kong, the cell layout in these areas is different from other cities. This research is an investigation and a revisit in search of a set of location estimation algorithms based on signal attenuation to work with GPS, so as to develop a dual channel positioning system. With the technical support from a local mobile phone operator, we have constructed and conducted several real world experiments for our investigation. The results are promising.
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