

Efficient, Authentication and Access control Implementation in Mobile Ad hoc Networks (MANET) as applied to Indoor Navigation Guidance System for Vision Impaired People

Prabath Lakmal Rupsinghe

Department of Electrical and Computer Engineering
Curtin University of Technology
Perth, Australia
lakmalr@hotmail.com

Dr. Iain Murray

Department of Electrical and Computer Engineering
Curtin University of Technology
Perth, Australia
i.murray@curtin.edu.au

ABSTRACT

Indoor navigation systems are gaining popularity by each day. Particularly Low Vision users are prominently in need of indoor positioning and navigating systems. Most of the efforts in creating such systems are using MANET (Mobile Ad-hoc Networks) as the base technology. However the properties of MANET's inherently provide greater challenges in areas like security, reliability and performance. Most of research work was done on those different challenges in isolation. A holistic approach to address all those challenges in an implementation is rare.

Ad-hoc collaboration is usually an unplanned interaction or created "immediately on the fly". In MANET networks Authentication and access-control trust relations established through, on-line- available evidence, may be short-term and largely peer-to-peer, where the peers may not necessarily have a relevant network that can be placed into a recognizable trust hierarchy. Trust relations involving a captured node need to be invalidated, and new trust evidence need to be collected and evaluated to maintain node connectivity in the ad-hoc network This paper present the framework on Trust Relations based on friendships mechanism which is adopted from the theory of small-world phenomenon (i.e. six degrees of separation) initiated by Milgram, to provide rapid authentication.

Efficient, Rapid Authentication is needed in practical implementations of an Indoor navigation system. Particularly when Low vision users are dependent on such system, a rogue node can be hazardous. Further research delivers a framework which combines reliability and performance, two important factors in practical implementation of an indoor navigation system.

KEYWORDS: MANET, Vision Impaired, Indoor Navigation, Authentication, Trust