

QoS Aware Fuzzy Rule Based Vertical Handoff Decision Algorithm for Heterogeneous Wireless Networks

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About the Speaker



Sudipta Mahapatra graduated in Electronics and Telecommunication Engineering from Sambalpur University, Orissa, India in the year 1990. He obtained his M.Tech. and Ph.D. degrees in Computer Engineering from IIT, Kharagpur in the year 1992 and 1997 respectively.

From April 1993 to September 2002 he was working in the Computer Science and Engineering department of National Institute of Technology, Rourkela. He was in the Electronic Systems Design Group of Loughborough University, UK, as a BOYSCAST Fellow of DST, Government of India, from March 1999 to March 2000. He joined the E & ECE Department of IIT Kharagpur in Sept. 2002 where

currently he is working as an Associate Professor.

His areas of research interests include: image and video coding/compression and optical/wireless networking.

About the Talk

Next generation networks are envisioned to be heterogeneous in nature as the demands are increasing towards the ubiquitous services in wireless networks. As different networks are having widely varying characteristics, it is difficult to maintain the QoS (Quality of Service) after handoff from one network to another network. Maintaining the QoS, based on applications, during the handoff in heterogeneous wireless networks needs an intelligent handoff decision mechanism. This lecture will focus on a QoS aware fuzzy rule based vertical handoff mechanism that makes a multi-criteria based decision, found to be effective for meeting the requirements of different applications in a heterogeneous environment. The QoS parameters considered are: available bandwidth, end-to-end delay, jitter, and bit error rate (BER). A new evaluation model is proposed using a non birth-death Markov chain, in which the states correspond to the available networks. Simulation results show that compared to other vertical handoff algorithms, the proposed algorithm gives better performance for different traffic classes. This work also explains the proof of concept of vertical handover demonstration using the proposed QoS aware vertical handover algorithm. The experiments were conducted in MobileIP testbed at IISc, Bangalore. The experiments were carried for both 3G to WiFi and WiFi to 3G scenarios. Real time streaming application is tested with the QoS aware fuzzy rule based algorithm.

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