International Journal of Uncertainty, Fuzziness and Knowledge-Based Systems (IJUFKS)

Current Issue | 2009 | 2008 | 2007 | All Volumes (1993-2009)

Volume: 17, Issue: 6 (2009) pp. 881-913 DOI: 10.1142/S0218488509006315

Abstract | Full Text (PDF, 526KB)

Title: **ADAPTIVE LIMITED FRACTIONAL GUARD CHANNEL ALGORITHMS: A LEARNING AUTOMATA APPROACH**

This research was in part supported by a grant from Institute for Studies in Theoretical Physics and Mathematics (IPM), Tehran, Iran.

Author(s): HAMID BEIGY
Department of Computer Engineering, Sharif University of Technology, Tehran, Iran
Institute for Studies in Theoretical Physics and Mathematics (IPM), School of Computer Science, Tehran, Iran
M. R. MEYBODI
Computer Engineering Department, Amirkabir University of Technology, Tehran, Iran
Institute for Studies in Theoretical Physics and Mathematics (IPM), School of Computer Science, Tehran, Iran

History: Received 9 May 2009
Revised 28 October 2009

Abstract: In this paper, two learning automata based adaptive limited fractional guard channel algorithms for cellular mobile networks are proposed. These algorithms try to minimize the blocking probability of new calls subject to the constraint on the dropping probability of the handoff calls. To evaluate the proposed algorithms, computer simulations are conducted. The simulation results show that the performance of the proposed algorithms are close to the performance of the limited fractional guard channel algorithm for which prior knowledge about traffic parameters are needed. The simulation results also show that the proposed algorithms outperforms the recently introduced dynamic guard channel algorithms.

Keywords: Cellular mobile networks; call admission control; limited fractional guard channel; learning automata; nonstationary environment; adaptive limited fractional guard channel