Course Outline

Course Title: Selected Topics in Wireless Ad hoc Networks (Fall 2014)
Pre-requisite: Data Communication Networks, Wireless Networks
Instructor: Dr. Syed M. K. Raazi
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Introduction: This is an advanced graduate level course for students with computer networking background. This course will cover latest research in important topics of Wireless Ad hoc Networks. This course will help students gain knowledge about wireless ad hoc networks and improve their research skills. Upon completion of this course, students will be able to read and understand research papers and identify their potential research areas.

Course Outline: -

1. A Survey on Wireless Ad Hoc Networks, M.G. Rubinstein, I.M. Moraes, M.E.M. Campista, L.H.M.K. Costa and O.C.M.B. Duarte, IFIP International Federation for Information Processing, Volume 211, Mobile and Wireless Communication Networks, pp 1-33, 2006.

2. An adaptive medium access control scheme for mobile ad hoc networks under self-similar traffic, M. Abu-Tair, G. Min, Q. Ni, H. Liu, The Journal of Supercomputing, Volume 53, Number 1, pp. 212-230, DOI: 10.1007/s11227-009-0324-3, 2010.

3. Directional medium access control for ad hoc networks, J. Wang, H. Zhai, P. Li, Y. Fang, D. Wu, Wireless Networks, Volume 15, Number 8, pp. 1059-1073, DOI: 10.1007/s11276-008-0102-9, 2009.

4. DRAND: Distributed Randomized TDMA Scheduling For Wireless Ad-hoc Networks, I. Rhee, A. Warrier, J. Min. L. Xu, IEEE Transactions on Mobile Computing, Volume 8, Number 10, pp. 1384-1396, http://doi.ieeecomputersociety.org/10.1109/TMC.2009.59, 2009.

5. Time–Space Opportunistic Routing in Wireless *Ad hoc* Networks: Algorithms and Performance Optimization by Stochastic Geometry, F. Bacelli, B. Blaszczyszyn, P. Muhlethaler, The Computer Journal, Volume 53, Number 5, pp. 592-609, doi: 10.1093/comjnl/bxp049, 2010.

6. The hop count shift problem and its impacts on protocol design in wireless ad hoc networks, B. Wang, H.B. Lim, D. Ma and C. Fu, Telecommunication Systems, Volume 44, Numbers 1-2, pp. 49-60, DOI: 10.1007/s11235-009-9221-6, 2010.

7. Cluster head election techniques for coverage preservation in wireless sensor networks, Stanislava Soro, Wendi B. Heinzelman, Ad Hoc Networks, Volume 7, Issue 5, Pages 955-972, ISSN 1570-8705, 10.1016/j.adhoc.2008.08.006, July 2009.

8. A very low power MAC protocol (VLPM) for wireless body area networks, Niamat ullah, Pervez Khan, Kyung Sup Kwak, MDPI Sensors, Volume 11, issue 4, pp. 3717-3737, 2011.

9. Directional MAC approach for wireless body area networks, Md. Asdaque Hussain, Md. Nasre Alam, Kyung Sup Kwak, MDPI Sensors, Volume 11, issue 1, pp. 771-784, 2011.

10. Cross-layer design vehicle-aided handover scheme in VANETs, Kuan-Lin Chiu, Ren-Hung Hwang and Yuh-Shyan Chen, Wireless Communications and Mobile Computing, Volume 11, Issue 7, pp. 916-928, 2011.

11. PROMPT: A cross-layer position-based communication protocol for delay-aware vehicular access networks, B Jarupan, E Ekici , Ad Hoc Networks, Volume 8, Issue 5, pp. 489-505 2010.

12. Bio-Inspired Cross-Layer Communication and Coordination in Sensor and Vehicular Actor Networks, Baris Atakan, Ozgur B. Akan, IEEE Transactions on Vehicular Technology, Volume 61, Number 5, pp. 2185-2193 June 2012.

13. A Protocol for Content-Based Communication in Disconnected Mobile Ad Hoc Networks, Julien Haillot and Frederic Guidec, Mobile Information Systems, Volume 6, Number 2, pp. 123-154, 2010.

14. A Self-Repairing Tree Topology Enabling Content-Based Routing in Mobile Ad Hoc Networks, L. Mottola, G. Cugola, G.P. Picco, IEEE Transcations on Mobile Computing, Volume 7, Issue 8, pp. 946-960, 2008.

15. Socially-aware routing for publish-subscribe in delay-tolerant mobile ad hoc networks, P.Costa, C. Mascolo, M. Musolesi, G.P. Picco, IEEE Journal on Selected Areas in Communications, Volume 26, Number 5, 748-760, 2008.

16. Self-organizing and Self-reconfigurable Event Routing in Ad Hoc Networks with Causal Dependency Awareness, G. Pei, B. Ravindran, ACM Transactions on Autonomous and Adaptive Systems (TAAS), Volume 6, Issue 3, Article No.19, September 2011.

Text Books: No specific course textbook. Materials in this course are derived from research papers published in top research journals and conferences.

Grading: All students will be required to read and understand specified research material before coming to the class. In class, research materials will be discussed. Also, assessment quizzes, based on the research material, will be given to students. Class participation of students and their performance in assessment quizzes will contribute towards their grades.