

MANAS KHATUA

CONTACT INFORMATION

Present Address:

School of Information Technology
Indian Institute of Technology Kharagpur
West Bengal, India - 721302
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P.S. - Narayangarh
Dist. - Paschim Medinipur
West Bengal, India - 721437
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PH.D. RESEARCH WORKS

My Ph.D. research area is **Contention-Based Wireless Networks** (CWNs), specifically **Wireless LANs**. My Ph.D. work focuses on analyzing the theoretical performance of the DCF MAC protocol from the packet-centric viewpoint, followed by the design and analysis of performance tuning mechanisms of the IEEE 802.11 DCF and the IEEE 802.11e EDCA protocols. We further analyze and design a jamming detection scheme in an energy constrained CWN. In these works, we investigate how the MAC layer issues, such as *idle channel*, *contention*, *collision*, and *delay* overheads, can be effectively and efficiently addressed for distributed channel access in CWNs.

I have already submitted my PhD Thesis, and waiting for review of the Thesis.

RESEARCH INTEREST

- Mobile Cloud Computing
- Network Security
- Wireless Ad-hoc & Sensor Networks
- Wireless LANs
- Cyber-Physical Systems

EDUCATION

Ph.D. in Information Technology, (Pursuing since 2011)

Indian Institute of Technology Kharagpur

Thesis: *Analysis of Collisions in Contention-Based Wireless Networks*

Adviser: Dr. Sudip Misra

Area of Study: Wireless Networks

Marks: 9("A" Grade)/10

M. Tech. in Information Technology, 2007

Bengal Engineering and Science University, Shibpur

Thesis: *GSPIN: Gradient-based Sensor Protocol for Information via Negotiation in Wireless Sensor Network*

Adviser: Dr. Indrajit Banerjee

Area of Study: Wireless Sensor Network

Marks: 9.2/10

B. Tech. in Computer Science & Engineering, 2003

University of Kalyani

College: RCC Institute of Information Technology, Kolkata.

Project: *Design and Implementation of an Inventory Control System*

Adviser: A. K. Chandra, Systems Manager & Head of Education and Training Division, Regional Computer Centre, Kolkata

Marks: 75.06%

Higher Secondary in Pure Science, 1998

West Bengal Council of Higher Secondary Education

School: Narayangarh R. R. C. L. U. S. Niketan, Paschim Medinipur.

Marks: 74.40%

Madhyamik in Basic Science, 1996

West Bengal Board of Secondary Education

School: Narayangarh R. R. C. L. U. S. Niketan, Paschim Medinipur.

Marks: 77.77%

JOURNAL PUBLICATIONS

1. **M. Khatua** and S. Misra, "D2D: Delay-aware Distributed Dynamic Adaptation of Contention Window in Wireless Networks," *IEEE Transactions on Mobile Computing*, (Accepted on 7th March 2015, Paper ID: TMC-2014-04-0173.R2).
2. S. Misra, S. Singh, **M. Khatua** and M. S. Obaidat, "Extracting Mobility Pattern from Target Trajectory in Wireless Sensor Networks," *International Journal of Communication Systems*, Vol. 28, No. 2, pp. 213-230, January, 2015.
3. S. Misra and **M. Khatua**, "Semi-Distributed Backoff: Collision-Aware Migration from Random to Deterministic Backoff," *IEEE Transactions on Mobile Computing*, 2014, (Published online: 22 July 2014, DOI: 10.1109/TMC.2014.2341613).
4. **M. Khatua** and S. Misra, "CURD: Controllable Reactive Jamming Detection in Underwater Sensor Networks," *Pervasive and Mobile Computing*, Vol. 13, pp. 203-220, August, 2014.
5. S. Misra, S. Mishra and **M. Khatua**, "Social Sensing-based Duty Cycle Management for Monitoring Rare Events in Wireless Sensor Networks," *IET Wireless Sensor Systems*, 2014, (Accepted, Manuscript ID. WSS-2013-0125.R).
6. S. Misra, S. Das, **M. Khatua** and M. S. Obaidat, "QoS-Guaranteed Bandwidth Shifting and Redistribution in Mobile Cloud Environment," *IEEE Transactions on Cloud Computing*, Vol. 2, No. 2, pp. 181-193, April-June, 2014.

7. T. Ojha, **M. Khatua** and S. Misra, "Tic-Tac-Toe-Arch: A Self-organizing Virtual Architecture for Underwater Sensor Networks," *IET Wireless Sensor Systems*, Vol. 3, No. 4, pp. 307-316, 2013.
 8. S. Misra, S. Dash, **M. Khatua**, A. V. Vasilakos and M. S. Obaidat, "Jamming in Underwater Sensor Networks: Detection and Mitigation," *IET Communications*, Vol 6, No. 14, pp. 2178-2188, 2012.
- CONFERENCE PUBLICATIONS
1. **M. Khatua** and S. Misra, "Exploiting Partial-Packet Information for Reactive Jamming Detection: Studies in UWSN Environment," *Proc. of the 14th International Conference on Distributed Computing and Networking*, TIFR, Mumbai, January 3-6, 2013, pp. 118-132.
 2. S. Das, S. Misra, **M. Khatua** and Joel J. P. C. Rodrigues, "Mapping of Sensor Nodes with Servers in a Mobile Health-Cloud Environment," *Proc. of the 15th International Conference on E-Health Networking, Application and Services*, Lisbon, October 9-12, 2013, pp. 481-485.
 3. S. Misra, A. Mondal, S. Banik, **M. Khatua**, S. Bera and M. S. Obaidat, "Residential Energy Management in Smart Grid: A Markov Decision Process-Based Approach," *Proc. of the IEEE International Conference on Internet of Things*, Beijing, August 20-23, 2013, pp. 1152-1157.
- OTHER PUBLICATIONS
1. **M. Khatua** and S. Misra, "Realizing Virtual MIMO through Opportunistic Parallelism for Increasing Revenue in Enterprise Wireless Local Area Networks." *In: The Second IDRBT Doctoral Colloquium*, IDRBT, Hyderabad, December 20-21, 2012.
- BOOK CHAPTERS
1. S. Misra and **M. Khatua**, "Cross-Layer Techniques and Applications in Wireless Sensor Networks," In: H. F. Rashvand and Y. S. Kavian (Eds.), *Using Cross-Layer Techniques for Communication Systems*, USA, IGI Global, 2012, pp. 94-119.
- MANUSCRIPTS UNDER REVIEW
1. S. Misra, S. Singh and **M. Khatua**, "MIRACLE: Mobility Prediction Inside a Coverage Hole Using Stochastic Learning Weak Estimator," *IEEE Transactions on Cybernetics*, (*Revise and resubmit as new*, Paper ID: CYB-E-2013-11-1124).
 2. S. Das, **M. Khatua**, and S. Misra, "Cheating-Resilient Bandwidth Distribution in Mobile Cloud Computing," *IEEE Transactions on Mobile Computing*, (*Revise and resubmit as new*, Paper ID: TMC-2014-08-0467).
 3. S. Das, **M. Khatua**, S. Misra and M. S. Obaidat, "Quality-assured Secured Load Sharing in Mobile Cloud Networking Environment," *IEEE Transactions on Cloud Computing*, (*Under major revision*, Paper ID: TCCSI-2014-11-0554.R1).

4. S. Misra and **M. Khatua**, “Packet-Centric Trade-off and Unfair Success Region in IEEE 802.11 WLANs,” *IEEE Transactions on Computers*, (Under major revision, Paper ID: TC-2014-04-0299.R1).
5. **M. Khatua** and S. Misra, “Anomaly May Not be Bad! – Realizing the Full Potential of Anomalous Slots in IEEE 802.11 Wireless Networks,” *IEEE Transactions on Mobile Computing*, (Under review, Paper ID: TMC-2014-12-0684).

TEACHING
EXPERIENCE

Indian Institute of Technology Kharagpur, India

Teaching Assistant, School of Information Technology

- Wireless Ad-Hoc & Sensor Networks, Autumn Semester 2012.
- Information System Design Laboratory, Autumn Semester 2011.

Dr. B. C. Roy Engineering College, Durgapur, India

Sr. Lecturer, Department of Information Technology,
1st January, 2008 to 5th February, 2008.

Taught: Data Structure

Bankura Unnayani Institute of Engineering, Bankura, India

Lecturer, Department of Computer Science & Engineering,
22nd November, 2005 to 31st December, 2007.

Taught: C Programming, JAVA, Operating Systems, Data Structure

RESEARCH
EXPERIENCE

Sponsored Research and Industrial Consultancy, IIT Kharagpur, India

Senior Research Fellow

26th May, 2010 to 31st March, 2013.

- Project: Towards Robust Efficient and Secure Data Acquisition in Underwater Sensor Networks.
- Sponsor: Department of Information Technology, Government of India.
- Type of Research:
Development of schemes in UWSNs for a) Delay Tolerant Routing, b) Fault Tolerant Routing, c) Jamming Detection, and d) Robust Architecture.
Underwater Sensor Network simulator desing using MATLAB.
Underwater Sensor Network simulator desing using NS-3.

PROFESSIONAL
EXPERIENCE

Tata Consultancy Services, India

Assistant Systems Engineer, Banking & Financial Services
6th February, 2008 to 25th June, 2010.

- Provided the core Insurance Solution using TCS BaNCS Insurance.
 - Client: DLF Pramerica Life Insurance Company Limited, India.
Duration: April, 2009 to June, 2010.
Role: System Designer, Developer, and Development Team Leader

	<ul style="list-style-type: none"> • Client: Skandia-BSAM Life Insurance Company Limited, China. Duration: June, 2008 to March, 2009. Role: System Developer.
PRESENTATION AND TALKS	<ul style="list-style-type: none"> • Delivered guest lecture on “Recent Research Trends in Wireless Sensor Networks” in “Seminar on Computing and Informatics”, organized by St. Thomas’ College of Engineering and Technology, Kolkata, June 2013. • Presented my paper in <i>the 14th International Conference on Distributed Computing and Networking</i>, TIFR, Mumbai, January 3-6, 2013,
SKILL SETS	<ul style="list-style-type: none"> • Programming Language: C, C++ (with Data Structures), Java, J2EE, Cobol • Operating System: Windows, Linux • Database: Oracle, MS Access • Procedural Language: PL/SQL • Simulator: NS-2, NS-3 • Tool: Matlab, gdb, Visual SourceSafe, Eclipse, NetBeans • Scripting: ShellScript, VBScript, JavaScript, Tcl • Web Design: JSP, HTML, XML
AWARDS	<p>National Internet Exchange of India</p> <ul style="list-style-type: none"> • National Scholarship at Ph.D. level for one year, 2014-15.
PROFESSIONAL AFFILIATIONS	<ul style="list-style-type: none"> • IEEE Student Member since January 2013 (ID: 92558724) • ACM Student Member since May 2012 (ID: 8993630)
SERVICE	<ul style="list-style-type: none"> • Reviewer: IHCI 2012, TechSym 2014, INDOCRYPT 2014, IEEE TCC. • Secretary of <i>Narayangarh Vivekananda Yuva Mahamandal</i>, an affiliated unit of <i>Akhil Bharat Vivekananda Yuva Mahamandal</i>, since 2010.
REFERENCE	<p>Dr. Sudip Misra (E-mail: smisra@sit.iitkgp.ernet.in, Phone: +91-9734880277) Associate Professor, School of Information Technology, Indian Institute of Technology Kharagpur, Kharagpur, West Bengal, India, 721302.</p> <p>Dr. K. Sreenivasa Rao (E-mail: ksrao@sit.iitkgp.ernet.in, Phone: +91-3222-282336) Associate Professor, School of Information Technology, Indian Institute of Technology Kharagpur, Kharagpur, West Bengal, India, 721302.</p> <p>Mr. Sumit Goswami (E-mail: sumit@hqr.drdo.in, Phone: +91-11-23007424) Additional Director, Dte of MIST, Defence Research and Development Organisation (DRDO) H.Q., Rajaji Marg, New Delhi, India, 110011.</p>