

RAMNARAYAN YADAV

Assistant Professor, Department of Computer Science & Engineering, IIIT Dharwad, India.

Email Id: narayanram.1988@gmail.com

RESEARCH INTERESTS

My research interests are algorithmic graph theory, approximation algorithms, parameterized algorithms, spectrum assignments and connectivity problems in wireless networks.

EDUCATION

PhD, January 2014 - November 2017

Department of Computer Science & Engineering

Indian Institute of Technology Patna, Bihar

Defense Date: 10 November 2017

Thesis Title: On Opportunistic Spectrum Access and Connectivity in Cognitive Radio Networks

Master of Technology, July 2011 - June 2013

Center of Excellence in Information & Communication Technology,

Indian Institute of Technology Jodhpur, Rajasthan

Thesis Title: On Data Distribution in Multi-Path TCP

CPI : 8.0/10

Bachelor of Technology, July 2006 - June 2010

Information Technology

Dr. A.P.J. Abdul Kalam Technical University, Uttar Pradesh, Lucknow

Percentage : 77.70 %

Intermediate, August 2003 - June 2005

S.S.S.I.C Azamgarh, Uttar Pradesh.

UP Board, Allahabad, Uttar Pradesh.

Percentage : 73.80 %.

High School, June 2003

Central Public School, Azamgarh, Uttar Pradesh.

UP Board, Allahabad, Uttar Pradesh.

Percentage : 66.33 %.

RESEARCH WORK

- **Opportunistic Spectrum Access and Connectivity in Cognitive Radio Networks, (PhD)**

Cognitive Radio Network (CRNs) can use scarce spectrum efficiently and envision as emerging technologies that can fulfill the future demands. In CRNs, users (or secondary users/unlicensed users) sense channels and use the idle channels and vacate the channel on being use by primary users (PUs) so that secondary users (SUs) do not interfere with the PUs. The research challenges in CRNs includes to design an efficient algorithms for spectrum assignment to maintain connectivity, spectrum hand-off etc. My research focuses on designing the efficient algorithms to address the robust connectivity issue in CRNs using graph theory concepts. We show that the connectivity problem in CRN is hard to address due to radio constraint and spectrum heterogeneity. Next, we addressed the connectivity problem and show that it is fixed parameter tractable (FPT), when the underlying potential graph is bounded by tree-width and the number

of channels are bounded by a constant. To support different collaborative operations in CRNs such as cooperative spectrum sensing, spectrum decision, spectrum assignments, and routing information updates, we design a common control channel (CCC) using the concept of k -hop clustering. Finally, we have developed an effective communication system for smart grid (SG) as an application of CRNs to support heterogeneous SG traffic types having different quality of service (QoS) requirements.

Supervisor : Dr. Rajiv Misra, Associate Professor, IIT Patna

• **Efficient Data Distribution in Multipath Transmission Control Protocol, (M.Tech. Project)**

Now a days data centers, smart phones and Internet devices are becoming Multi-homed. To effectively utilize the multiple links between two communicating end points, it is needed to use all the available interfaces for data transmission. Multipath TCP (MPTCP) is an effort that enables end points to distribute data over available interfaces simultaneously. This research focuses on designing an efficient algorithm at TCP layer for efficient data distribution over multiple available interface to improve the network performance in terms of delay and throughput.

Supervisor : Dr. Venkata Ramana Badarla, Associate Professor, IIT Tirupati

PUBLICATIONS Journals :

1. Ram Narayan Yadav, Rajiv Misra, D. Saini, "Energy Aware Cluster based Routing Protocol over Distributed Cognitive Radio Sensor Network", *Computer Communications (Elsevier)*, 2018.
2. Ram Narayan Yadav, Rajiv Misra, "Approximating Common Control Channel Problem in Opportunistic Cognitive Radio Networks", *IEEE Systems Journal*, 2018.
3. Ram Narayan Yadav, Rajiv Misra, "Approximating the Largest Connected Topology in Cognitive Radio Networks", *Computer Networks (Elsevier)*, 2018.
4. T. Limbasiya, D. Das, Ram Narayan Yadav "A reputation-based truthfulness paradigm for multi-hop transmission in cognitive radio networks", *International Journal of Ad Hoc and Ubiquitous Computing (IJAHUC)*, 2018.
5. Ram Narayan Yadav, Rajiv Misra, S. Bhagat, "Spectrum Access in Cognitive Smart-Grid Communication System with Prioritized Traffic", *Ad Hoc Networks (Elsevier)*, 2017.
6. Yadav RN, Misra R, " κ -channel connectivity in cognitive radio networks for bounded tree-width graphs", *International Journal Communication System (IJCS-Wiley)*, 2017.
7. Yadav, Ram Narayan, and Rajiv Misra, "On k -channel connectivity in cognitive radio networks through channel assignment", *AEU-International Journal of Electronics and Communications (Elsevier)*, 2017.
8. Rajiv Misra, Ram Narayan Yadav, " k -Hop Neighbour Knowledge Based Clustering in CRN under Opportunistic Channel Access", *International Journal of Communication Networks and Distributed Systems (IJCND)*, 2016.
9. Ram Narayan Yadav, Kapil Sharma, "On Efficient Data Distribution in Multipath TCP", *International Journal of Communication Networks and Distributed Systems (IJCND)*, 2016.

Conferences :

1. A Ralhan, Ram Narayan Yadav, Rajiv Misra, "Minimum Interference Topology Control in Cognitive Radio Networks through Channel Assignment", *Advances in Computing, Communications and Informatics (ICACCI), 2018 International Conference on*. IEEE, 2018.
2. D Das and Ram Narayan Yadav "A Reputation-Based Trust Management Model in Multi-hop Cognitive Radio Network", *Advances in Intelligent Systems and Computing, vol 708*. Springer, Singapore-2018.
3. Ram Narayan Yadav, Rajiv Misra, A Jain, "Distributed Algorithm for Robust and Interference Free Topology in Cognitive Radio Networks", (*MobiMWareHN 2017*) associated with *ACM Mobihoc-2017*.
4. J. Agrawal, A. Singhal, R.N. Yadav, "Multipath routing in mobile Ad-hoc network using meta-heuristic approach", *Advances in Computing, Communications and Informatics (ICACCI), 2017 International Conference on*. IEEE, 2017.
5. Saini, Divya, Rajiv Misra, and Ram Narayan Yadav, "Distributed event driven cluster based routing in cognitive radio sensor networks", *India Conference (INDICON), 2016 IEEE Annual*. IEEE, 2016.
6. A. Sherawat, Rajiv Misra, Ram Narayan Yadav, "Connectivity in CRNs with Bounded Treewidth Potential Graph and its Fixed Parameter Tractability", accepted in *NCC*, 2016.
7. Rajiv Misra, Ram Narayan Yadav, V. Dosapati, "On Robust k-hop clustering in Ad-hoc Cognitive Radio Networks", accepted in *NCC*, 2016.
8. Yadav, Ram Narayan, and Rajiv Misra, "k-Channel Connected Topology Control Algorithm for Cognitive Radio Networks", accepted in *COMSNETS*, 2016.
9. Yadav, Ram Narayan, et al, "Opportunistic Spectrum Access in CR Network in Licensed and Unlicensed Channels", *Proceedings of the 2015 International Conference on Distributed Computing and Networking*, ACM, 2015.
10. Yadav, Ram Narayan, and Rajiv Misra, "Periodic channel-hopping sequence for rendezvous in cognitive radio networks", *Advances in Computing, Communications and Informatics (ICACCI), 2015 International Conference on*. IEEE, 2015.
11. Yadav, Ram Narayan, and Rajiv Misra, "Multipath routing protocols in Cognitive Radio Networks", *India Conference (INDICON), 2014 Annual IEEE*. IEEE, 2014.
12. Gupta, Utkarsh, Ram Narayan Yadav, and Rajiv Misra. "QoS based opportunistic channel scheduling in cognitive radio networks", *TENCON 2014-2014 IEEE Region 10 Conference*, IEEE, 2014.
13. Dosapati Vinod, Rajiv Misra, RN Yadav, Sourabh Bhagat, "2-Hop Neighbour Knowledge Based Clustering in CRN under Opportunistic Channel Access", *International Conference on Telecommunication Technology and Management (ICTTM-2015)*.
14. Yadav, Ram Narayan, and Rajiv Misra, "An Analysis of Different TCP Variants in Cognitive Radio Networks", *Cyber-Enabled Distributed Computing and Knowledge Discovery (CyberC), 2014 International Conference on*. IEEE, 2014.

Communicated Journals :

1. Ram Narayan Yadav, "An Adaptive, Fault Tolerant, Flow-level Routing Scheme for Data Center Networks." (Article under-review)

Google Scholar URL :
<http://scholar.google.co.in/citations?user=xK4qSawAAAAJ&hl=en>

DBLP Link:
https://dblp.org/pers/hd/y/Yadav:Ram_Narayan

SKILLS

Software Skills :

MATLAB, Network Simulator-2, Network Simulator-3, Qualnet, C.

Operating Systems :

Linux, and Windows.

Language Skills :

Hindi and English.

PROFESSIONAL SERVICES

Organizing Committee Member :
WCASET'17

TPC Member :

IEEE ICACCI'18, ICITISEE 2018, IEEE ICACCI'17, ICCISN'17,
International Symposium on Intelligent Systems Technologies and Applications (ISTA'18)

Reviewer :

SAI'2017, ISTA'2017, ENVICET'2016, ICPEICES'16, IEEE INDICON'15, ENVICET'15
Computer Networks Journal (COMNET), Ad Hoc Networks

AWARDS AND HONOURS

- Fellowship by the MHRD, GOI during PhD from January 2014 - October 2016
- Fellowship by the MHRD, GOI during M. Tech from July 2011 - June 2013
- Qualified GATE-2011
- Qualified GATE-2012

WORK EXPERIENCES

Post Doctoral Fellow, Departement d'informatique, Universite du Quebec en Outaouais (UQO), Canada **(05/2018-12/2018)**

Assistant Professor, NIIT University Neemrana, Rajasthan, India (10/2016-05/2018)

Assistant Professor, IMS Unison University Dehradun, Uttarakhand, India (7/2013-12/2013)

REFERENCES

Dr. Rajiv Misra
Associate Professor,
Department of Computer Science & Engineering,
Indian Institute of Technology, Patna, Bihar, India.
Email: rajivm@iitp.ac.in

Dr. Venkata Ramana Badarla
Associate Professor,
Department of Computer Science & Engineering,

Indian Institute of Technology, Tirupati, Andhra Pradesh, India.
Email: ramana@iittp.ac.in