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Performance Evaluation of Uplink Shared Channel for Cooperative Relay based Narrow Band Internet of Things Network

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Abstract

Low Power Wide Area Network (LPWAN) is one of the fastest growing network techniques provides efficient communications for smart cities, e-Health, industry 4.0 and other applications. LPWAN enables long-rang communications for M2M and cellular IoT networks. Narrowband-IoT (NB-IoT) is a type of LPWAN developed by 3GPP to connect a wide stream of IoT services and devices. NB-IoT systems rely on the mechanism of repeating the same signal every specified period of time in order to improve radio coverage better than it is in LTE systems. Repetition process is used to enhance the coverage of NB-IoT and for upgrade throughput as well. However, increasing the repetition of the signal significantly may give a negative result relative to the bandwidth limits. A cooperative relay (CoR) can be used beside repetition mechanism to helps reduce bandwidth stress. Moreover, the use of CoR for NB-IoT in physical uplink shared channel with repetitions will enhance the throughput. This paper will evaluate the performance of the CoR to enhance physical uplink shared channel in NB-IoT. The NB-IoT system model is simulated bu MATLAB to demonstrate the use of Cooperative relay (CoR) scheme in NPUSCH for NB-IoT for performance evaluation and comparison of using CoR scheme by considering metrics like data rate, throughput, and delay. The results conclude that in using CoR in NB-IoT gives high performance in overall NoT network throughput. © 2022 IEEE.

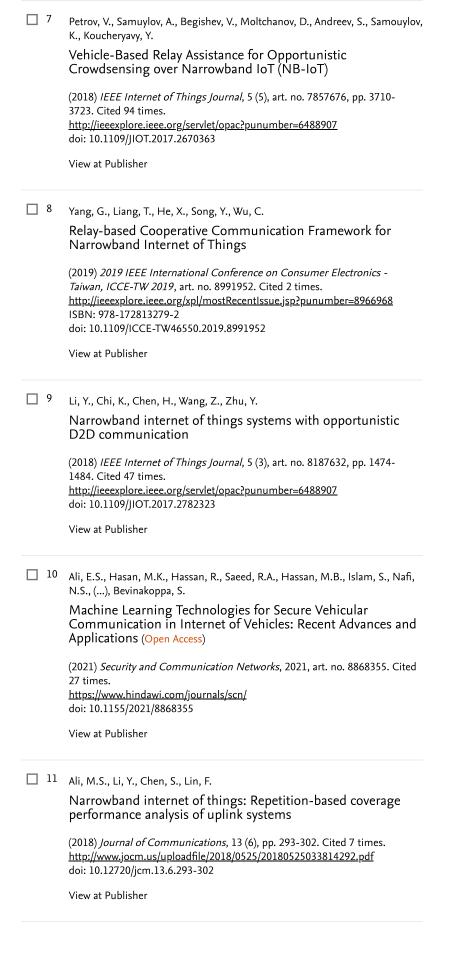
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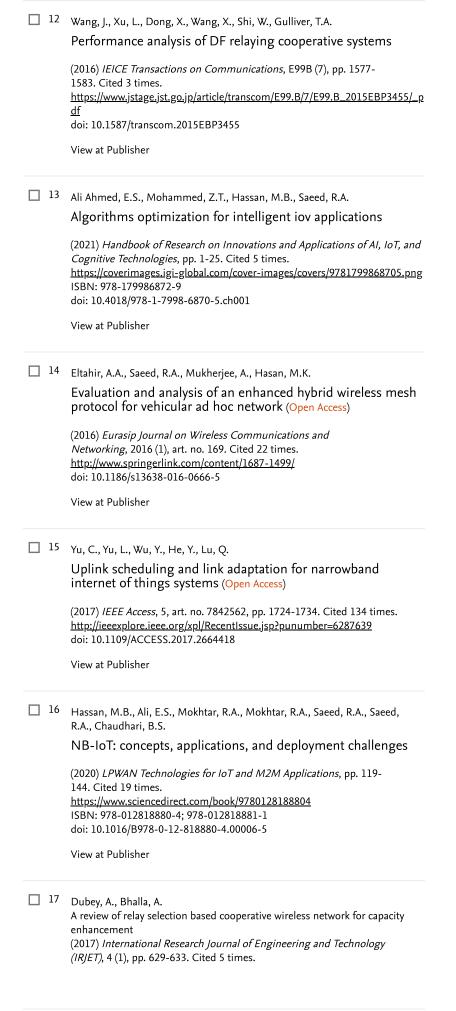
(M2M; Channel Quality Indicator (CQI); CoR; Low Power Wide Area Network (LPWAN); LTE; NB-IoT; repetitions

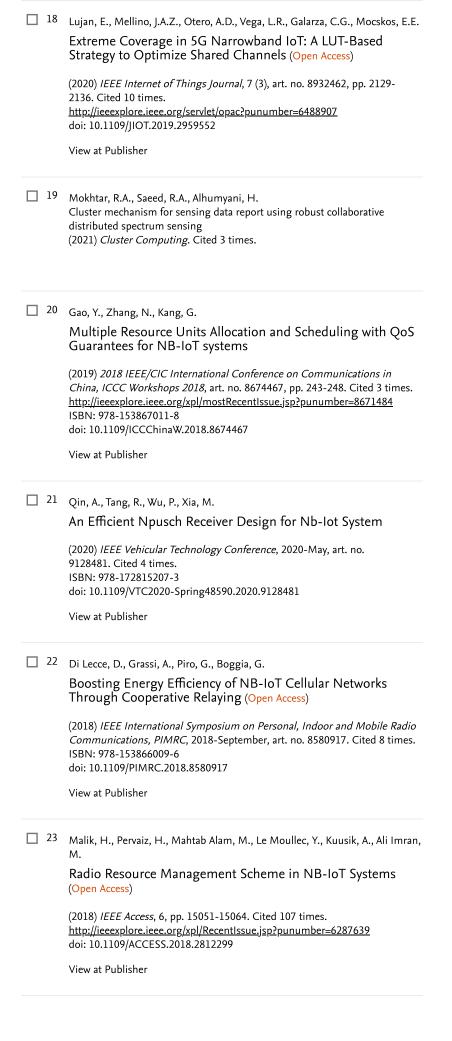
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2	Zhai, W. Design of narrowband-IoT oriented wireless sensor network in urban smart parking (Open Access) (2017) International Journal of Online Engineering, 13 (12), pp. 116-126. Cited 6 times. http://online-journals.org/index.php/i-joe/article/download/7886/4717 doi: 10.3991/ijoe.v13i12.7886 View at Publisher
3	Andres-Maldonado, P., Ameigeiras, P., Prados-Garzon, J., Ramos-Munoz, J.J., Navarro-Ortiz, J., Lopez-Soler, J.M. Analytic analysis of narrowband IoT coverage enhancement approaches (Open Access) (2018) 2018 Global Internet of Things Summit, GloTS 2018, art. no. 8534539. Cited 21 times. http://ieeexplore.ieee.org/xpl/mostRecentIssue.jsp?punumber=8514818 ISBN: 978-153866451-3 doi: 10.1109/GIOTS.2018.8534539 View at Publisher
4	Ahmad, N.A., Razak, N.I.A. Performance of Narrow-Band Internet of Things (NB-IoT) Based on Repetition of Downlink Physical Channel (2019) 2019 26th International Conference on Telecommunications, ICT 2019, art. no. 8798776, pp. 506-509. Cited 4 times. http://ieeexplore.ieee.org/xpl/mostRecentlssue.jsp?punumber=8786770 ISBN: 978-172810273-3 doi: 10.1109/ICT.2019.8798776 View at Publisher
5	Abdelgadir, M., Saeed, R.A., Babiker, A. Cross layer design approach for efficient data delivery based on ieee 802.11p in vehicular ad-hoc networks (vanets) for city scenarios (2018) <i>International Journal on Ad Hoc Networking Systems (IJANS)</i> , 8 (4). Cited 7 times. October.
6	Di Lecce, D., Grassi, A., Piro, G., Boggia, G. Boosting Energy Efficiency of NB-IoT Cellular Networks Through Cooperative Relaying (Open Access) (2018) IEEE International Symposium on Personal, Indoor and Mobile Radio Communications, PIMRC, 2018-September, art. no. 8580917. Cited 8 times. ISBN: 978-153866009-6 doi: 10.1109/PIMRC.2018.8580917 View at Publisher

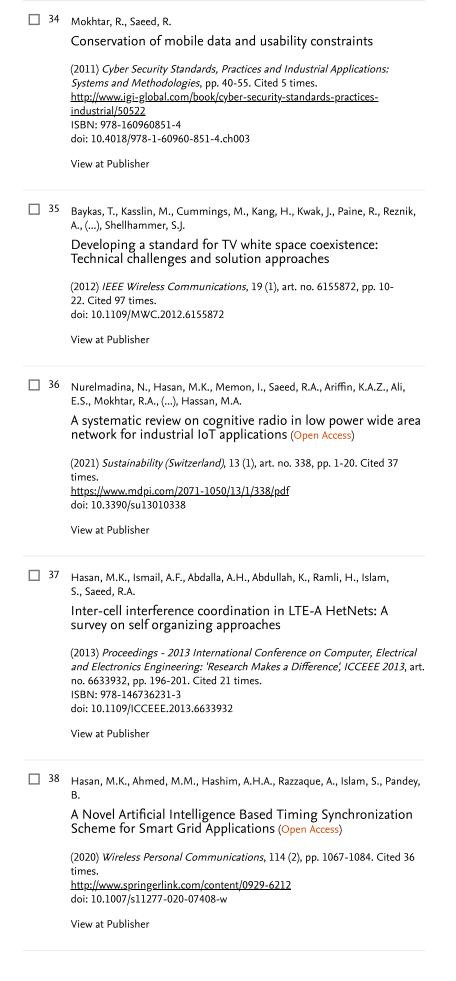


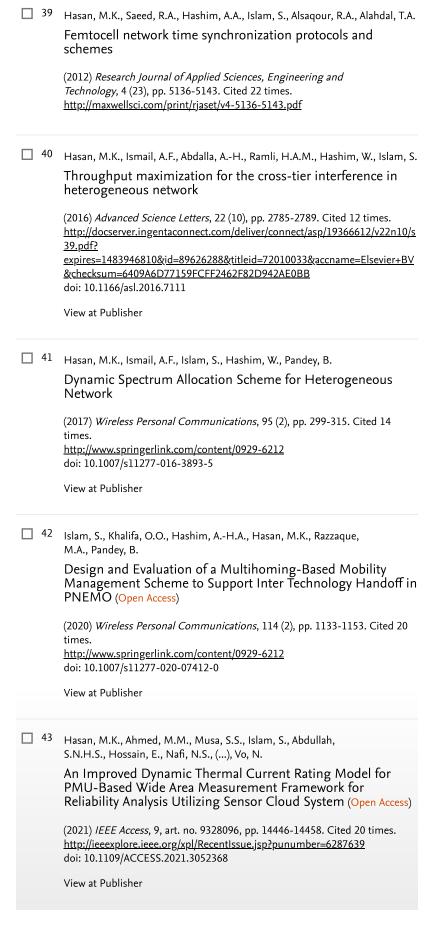






☐ 29	Garcia-Martin, J.P., Torralba, A. On the Combination of LR-WPAN and LPWA Technologies to Provide a Collaborative Wireless Solution for Diverse IoT (2019) International Conference on Wireless and Mobile Computing, Networking and Communications, 2019-October, art. no. 8923566. Cited 3 times. http://ieeexplore.ieee.org/xpl/conferences.jsp ISBN: 978-172813316-4 doi: 10.1109/WiMOB.2019.8923566 View at Publisher
□ 30	Saeed, M.M., Saeed, R.A., Saeid, E. Survey of privacy of user identity in 5g: Challenges and proposed solutions (2019) Saba Journal of Information Technology and Networking (SJITN), 7 (1). Cited 5 times.
31	Saeed, R.A., Saeed, M.M., Mokhtar, R.A., Alhumyani, H., Abdel-Khalek, S. Pseudonym mutable based privacy for 5g user identity (Open Access) (2021) Computer Systems Science and Engineering, 39 (1), pp. 1-14. Cited 4 times. https://www.techscience.com/csse/v39n1/42876 doi: 10.32604/csse.2021.015593 View at Publisher
□ 32	Saeed, M.M., Saeed, R.A., Saeid, E. Preserving Privacy of Paging Procedure in 5 th G Using Identity-Division Multiplexing (2019) 2019 1st International Conference of Intelligent Computing and
	Engineering: Toward Intelligent Solutions for Developing and Empowering our Societies, ICOICE 2019, art. no. 9035167. Cited 7 times. http://ieeexplore.ieee.org/xpl/mostRecentIssue.jsp?punumber=9023501 ISBN: 978-172814487-0 doi: 10.1109/ICOICE48418.2019.9035167 View at Publisher





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