

Dr. Poonam Lohan
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EXPERIENCE : **5 Years** of explored experience in doing research at **IIT Delhi** in the field of performance analysis and resource allocation in heterogeneous cellular networks, UAV assisted wireless communication networks, and heterogeneous users in wireless communication networks with economic framework design. **1 Year** experience of software designing and testing for instrument cluster of four wheeler in an automotive Industry. **2 Years'** experience of teaching and lab conducting in reputed universities.

EDUCATION

<u>Year</u>	<u>Degree/Exam</u>	<u>Institute/School</u>	<u>CGPA/Marks(%)</u>
2014-2019	Ph.D in Electrical Engineering	Indian Institute of Technology Delhi, India	CGPA 8.158/10
2009-2011	M.Tech in Electronics and Communication Engineering	National Institute of Technology Kurukshetra, Haryana, India	CGPA 9.25/10
2005-2009	B.Tech in Electronics and Communication Engineering	Guru Jambheshwar University of Science and Technology, Hisar, Haryana, India	73.65 %
2004	12 th class, HBSE	Holy Child Sr. Sec. School, Hisar, Haryana, India	77.8%
2002	10 th class, HBSE	Upasana Vidya Mandir, Narnaund, Hisar, Haryana, India	80.83%

RESEARCH INTERESTS AND SKILLS

1. Performance analysis of Heterogeneous cellular networks
2. Resource allocation in wireless communication networks to heterogeneous users
3. Economics framework design for social-welfare maximization and profit maximization
4. Energy-efficient resource allocation in UAV-assisted wireless communication networks
5. Resource optimization in hybrid-powered (solar and grid powered) small cell networks
6. Topology control and MAC layer protocol in under water communication networks
7. Secrecy outage probability and secrecy rate analysis in UAV (as Jammer) assisted wireless networks

8. Novel methodologies to solve the nonconvex and combinatorial practical problems in wireless communications and derive their conditional global-optimality conditions

9. **Research Tools:** Stochastic Geometry, Optimization, Game Theory, Machine learning, Stochastic Analysis.

EXPERTISE

Wireless Communication, Digital Communication, Data Networks (Queuing Theory), Computer Communication Networks (Layering Structure), Convex Optimization, Signals and Systems, Communication Systems. Information Theory and Error Control Coding, MIMO-OFDM, Detection and Estimation Theory.

TECHNICAL SKILLS

Languages: C, Embedded C, learning Python

Software Tools: MATLAB, Mathematica, CVX, CAN, QualNet

RESEARCH OUTCOMES:

Journals

1. **P. Lohan** and D. Mishra, "Utility-Aware Optimal Resource Allocation Protocol for UAV-Assisted Small Cells With Heterogeneous Coverage Demands," in *IEEE Transactions on Wireless Communications*, vol. 19, no. 2, pp. 1221-1236, Feb. 2020, doi: 10.1109/TWC.2019.2951770.
2. **P. Lohan**, J.-B. Seo, S. De, "Social Welfare Maximization in Two-Tier Heterogeneous Cellular Networks," *IEEE Commun. Letters*, vol. 23 no. 10, pp. 1826-1830, Oct. 2019.
3. J.-B. Seo, and **P. Lohan**, "Pricing in Small Cell Deployment," *IEEE Commun. Letters*, vol. 20, no. 8, pp. 1615-1618, Aug. 2016.
4. V. Gupta, **P. Lohan**, "Transmission Power Controlled Topology Control in Wireless Sensor Networks," *Ciit International Journal of Wireless Communication*, Vol 3, no. 9, pp. 644 – 647, June 2011.

Conference Publication

1. **P. Lohan**, Puja Dube, and Monika Agrawal, "A Novel 3D Topology Design for Underwater Sensor Networks," in *Proc. IEEE Global Oceans 2020: Singapore-US Gulf Coast*, Oct. 2020, pp.1-5.
2. D. Mishra, **P. Lohan**, L. N. Devi, "Coverage-Constrained Utility Maximization of UAV," in *Proc. IEEE International Conference on Communications (ICC)*, Shanghai, May 2019, pp. 1-6.
3. **P. Lohan**, J.-B.Seo, and S. De, "Utility-Fair Wireless Resource Allocation for Heterogeneous Users," Accepted and presented in *Proc. IEEE PIMRC-2019*, 8-11 Sept. 2019, Istanbul, Turkey.
4. **P.Lohan**, "Net Expenditure (OPEX+CAPEX) Minimization in Hybrid Power Enabled Base Station," in *Proc. ICEIT Conference on Advances in Mobile Communications, Networking and Computing*, Delhi, India, Apr. 2019.

5. **P. Lohan**, R. Chauhan, "Geography-informed Sleep Scheduled and Chaining Based Energy Efficient Data Routing in WSN" in IEEE SCEECs, Mar. 2012, Bhopal, India.

WORK (RESEARCH + TEACHING+INDUSTRY) EXPERIENCE

1. **Assistant Professor at PEC (Deemed to be University), Chandigarh (January, 2020- till date):** Performing all the academic responsibilities (teaching, Lab conducting, guiding Master Thesis, and documentary works). I also work to contribute more on the current research topics related to wireless communication networks such as UAV assisted Network, secrecy analysis, Performance analysis, and resource allocation to heterogeneous users in URLLC networks.
2. **Research Associate at C.A.R.E, IIT Delhi (September, 2019 – December, 2019):** Worked on an ongoing project sponsored by Indian Navy and proposed a novel 3D topology design for underwater sensor networks.
3. **PhD Research Scholar at IIT Delhi (January, 2014 – August, 2019):** Proposed various economic framework based resource allocation strategies and pricing schemes for small-cells networks, two-tier heterogeneous networks and heterogeneous user to maximize the social welfare, utility of users, profit of service provider, and utility-proportional fairness in heterogeneous users. Title of the Ph.D dissertation research is: "*Resource Allocation with Economic Framework in Heterogeneous Cellular Networks and Heterogeneous Users*".
4. **Teaching/Research Assistant at IIT Delhi, India (July, 2014 – July, 2018):** Rendered responsibilities (8 hours per week) outside normal academic work as a Teaching/Research Assistant. Conducted lab sessions for undergraduate course on Communication systems and Introduction to Electrical Engineering, and assisted in Minor-Major assessments(UG).
5. **Assistant Professor at EECE, The NorthCap University (formerly ITM University), Gurugram (July, 2013- December 2013):** Course taught: Microprocessor. Lab conducted: Microprocessor lab. I got excellent feedback from students for my teaching at end of semester.
6. **Software Engineer at Magnetti Marelli UM Electronics Ltd., Manesar, Gurugram (April 2011- May, 2012):** Worked towards development, testing and debugging of the fuel module of instrument cluster (dashboard) of four wheeler (Maruti Project).
7. **Teaching Assistant at NIT kurukshetra, Haryana, India (July, 2009 – March, 2011):** Worked as a Teaching Assistant for 8 hours per week outside normal academic work. **8. Active Reviewer** in IEEE Communication Letters and reviewed papers in IEEE International Conference on Communications (IEEE ICC) 2018 & 2019.

PUBLIC AND PROFESSIONAL SERVICE

1. Paper presentation in *IEEE conference on electrical, electronics and computer science 2012* organized by **MANIT, Bhopal** during March 1-2, 2012 on the topic "*Geography Informed Sleep Scheduling and Chaining based Energy-efficient Data Routing in Wireless Sensor Networks*".
2. Paper presentation in *ICEIT Conference on Advances in Mobile Communications, Networking and Computing 2019*, Delhi, during April 11-12, 2019 on the topic "*Net Expenditure (OPEX+CAPEX) Minimization in Hybrid Power Enabled Base Station*".
3. Attended "*Microsoft research summer school on Wireless Networking*" at the **Indian Institute of Science (IISc), Bangalore** from June 23 to July 02, 2014.
4. Attended Workshop on "*Convex Optimization for Wireless Communications*", at **IIT Kanpur** (Sept. 2014)

PROFESSIONAL MEMBERSHIP

Student Member of IEEE and IEEE Communications Society (membership no.: 93055813), since June 17, 2019.

ACADEMICS PROJECTS

1. **M.Tech Thesis Topic:** “*Topology control in wireless sensor networks*”. Keywords: Energy model, clustering, transmission power control, lifetime improvement, LEACH, PEGASIS.
2. **M.Tech. Project:** Double security level based wireless access card with attendance system.
3. **B.Tech Project:** Fastest Finger First.

AWARDS AND SCHOLASTIC ACHIEVEMENTS

1. **Gold medal and certificate of Merit** awarded at National Institute of Technology Kurukshetra for securing first rank in M. Tech. (ECE), 2009-2011 batch.
2. **Awarded MHRD Scholarship** for M.Tech through GATE qualification in July 2009-March 2011.
3. **Four times GATE qualified** with the highest percentile 99.7 in year 2013 with **All India Rank (AIR)-346** and latest score 650 (in year 2017) **in the Electronics and Communication Engineering discipline.**
4. Secured **1st** rank in my school in matriculation (10th standard) and intermediate (12th standard) HBSE examinations.

PERSONAL PARTICULARS

1. **Nationality:** Indian
2. **Gender:** Female
3. **Date of birth:** 13th Nov. 1987
4. **Marital status:** Married
5. **Permanent Address:** H.No: 76, Type-3, Vidyut Nagar, Hisar, Haryana-125001, India

DECLARATION

I do hereby declare that the information given in the curriculum-vitae is true and correct to the best of my knowledge.

Dr. Poonam Lohan

References Details:

1. Prof. Swades De

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Indian Institute of Technology, Delhi
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2. Dr. Jun Bae Seo

Ph.D (The University of British Columbia)
Currently associated with Gyeongsang National University, South Korea
Email: jbseoca@gmail.com

3. Prof. Monika Aggarwal

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Indian Institute of Technology, Delhi
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4. Dr. Vrinda Gupta

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Current Address : Room No.114, ECE Department, NIT
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4. Dr. Deepak Mishra

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