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Dr. Neeraj Kumar Goyal received PhD degree in year 2006 from IIT Kharagpur in Reliability Engineering. He received the Bachelor of Engineering (HONS) degree in Electronics and Communications Engineering from MREC Jaipur, Rajasthan, India in 2000. He has served as an Executive in M/s Secure Meters Ltd., Udaipur from July 2000 to July 2001. He is serving IIT Kharagpur as faculty member since 2006 and currently serving as Associate Professor in Subir Chowdhury School of Quality and Reliability. He has guided approx. 40 M Tech, 2 MS, 8 PhD. He has published three books published Wiley and Springer. He has published more than 45 international journal and 12 international conference papers. He is actively engaged in providing research and consultancy services in the area of reliability and safety engineering to various organizations like DRDO, NPCIL, Secure Meters, Vodaphone, L&T, John Deere, ISRO, IGCAR, Railways etc. He is regularly organizing short term courses in the area of reliability engineering for industry professionals.

CONSULTANCY PROJECTS

#	***Project Name***	***Sponsored By***	***Period***
1	Reliability Work Package of LRSAM	DRDL, Hyderabad	2007-08
2	RAMS Model for Project ASTRA	DRDL, Hyderabad	2007-08
3	Shutdown PSA of KAPS	NPCIL, Mumbai	2007-08
4	Accelerated Life Testing of 30-pin Connector	BARC, Mumbai	2008-09
5	Flood PSA of KAPS	NPCIL, Mumbai	2009-11
6	Assessment of Residual Reliability of Armored Fighting Vehicles through CBM	MCEME, Hyderabad	2010-11
7	Advance Studies on Human Reliability Analysis	NPCIL, Mumbai	2012-13
8	Reliability Modeling and Prediction of Process Control System	DRDO, Panagarh	2012-13
9	Reliability Assessment and Improvement	Secure Meters, Udaipur	2014-15
10	Preliminary Risk Analysis of Hypersonic Technology Demonstrator Vehicle	DRDL, Hyderabad	2014-15
11	Flood (Internal and External) Probabilistic Safety Assessment of MAPS	MAPS, NPCIL, Madras	2015-16
12	Application of RAMS concepts for HHP (4500HP) Diesel Locomotives	Diesel Locomotive Works,Varanasi	2015-16

13	Reliability Assessment and Reliability Improvement of Products Designed	Secure Meters, Udaipur	2015-16
14	Reliability Work Package for Project LR-SAM	DRDL, Hyderabad	2015-16
15	Reliability Assessment and Reliability Improvement of Products Designed	Secure Meters, Udaipur	2016-17
16	Standard Based Reliability, Prediction of Submarine Degaussing System	L&T Ltd., Mumbai	2017-18
17	Software Quality and Reliability	John Deere, Pune	2020-21
18	Reliability Study of RUSTAM-II	ADE, Bangalore	2020-21
19	Resiliency Modeling and Analysis with Recommendations for Overhead LV Distribution Network of CESC Ltd. in Kolkata Region	CESC, Kolkata	2021-22

SPONSORED RESEARCH PROJECTS

#	***Project Name***	***Sponsored By***	***Period***
1	Design of Minimal Cost Backbone Network Layout for Given Capacity and Reliability Requirements	VICET, IIT Kharagpur	2009-13
2	Reliability Assessment of the Large Complex Computer Code	AERB, Mumbai	2009-11
3	Reliability Assessment of L40 Stage Assembly and Integration Process	ISRO, Bengaluru	2016-19
4	Reliability Studies on Electronics Power Conditioning (EPC) of Microwave Power Module	MTRDC, DRDO, Bengaluru	2015-16
5	Developing a Reliability Engineering Framework for Indian Railways Rolling Stock	DST	2016-20
6	Reliability Studies on Electronics Power Conditioning (EPC) for Space Application	MTRDC, DRDO, Bengaluru	2016-17
7	Quantification of Software Reliability for Computer-Based I & C Systems of Prototype Fast Breeder Reactor (PFBR)	IGCAR, Kalpakkam	2017-18
8	Design, Development, Verification and Reliability Analysis of Prototype Control Room HMI Software for Fast Breeder Reactors	IGCAR, Kalpakkam	2019-22

SHORT TERM COURSES ORGANIZED

- Reliability Engineering For TVS:
  - 4 Modules, 17Sept, 2018 - 28 Feb, 2019
- RAMS for Railway Systems
  - 21-25 July, 2014
  - 27-31 July, 2015
  - 11-15 July, 2016
  - 10-14 July, 2017
  - 09-13 July, 2018
  - 08-12 July, 2019
  - For Siemens, 21-23 Oct, 2019
  - Online: 14-18 Dec, 2020

    - Online 6-10 Dec, 2021
    - For DMDE, Hyderabad 14-16 Dec, 2021
- Probabilistic Risk/ Safety Assessment
    - 07-18 Dec, 2015
- Introduction to Software Reliability and Life Testing
    - For John Deere, 30 Sep - 01 Oct, 2019
- Reliability Engineering and Life Testing for Whirlpool
    - 10 Modules: 11 Jan – 24 Aug, 2021

GUIDANCE TO PHD/MS STUDENTS

Level	*Name of Scholar*	*Area of Study*	*Status*
MS	Suparna Chakraborty	Reliability Evaluation of Flow Networks	Completed
MS	Tapash Kumar Das	Reliability, Availability and Maintainability (RAM) Modelling and Analysis of Railway Rolling Stocks	Completed
PhD	Ajeet Kumar Pandey	Software Reliability and Quality Assurance Through Fault Prediction Models	Completed
PhD	Purobi Patowari	Operational Security Assessment and Power Quality Monitoring of Electric Power System	Completed
PhD	Manjubala Bisi	Software Reliability Prediction using Artificial Neural Networks	Completed
PhD	Esha Datta	Reliability Evaluation and Topology Optimization of Stochastic Capacitated Flow Networks Using Sum of Disjoint Products	Completed
PhD	Rajkumar S.	Reliability-based Design and Analysis of Fault Tolerant Multistage Interconnection Networks	Completed
PhD	Suparna Chakraborty	Coverage-Oriented Reliability of Wireless Sensor Networks with Multistate Nodes	Completed
PhD	Sajjade Faisal Mustafa	Design of Radiation Tolerant Reliable CMOS Circuits	Completed
PhD	Saurav Sinha	Reliability and Availability Prediction of Real-Time Embedded Systems	Completed
PhD	Partha Chakrabarti	Reliability Evaluation of Stochastic Flow Networks	Ongoing
PhD	Shikha Dwivedi	Software Reliability Growth Models	Ongoing
PhD	Namrata Mohanty	Diagnostics, Prognostics and Health Management of Lithium-Ion batteries in Electric Vehicles	Ongoing
PhD	Subir Kumar Patra	Quality of New Product Development	Ongoing
PhD	Ashrit Swain	System Resiliency	Ongoing
PhD	Amandeep Nagpal	Reliability Data Analytics	Ongoing

BOOKS

[1]. Pandey A.K. and N.K. Goyal, “Early Software Reliability Prediction: A fuzzy logic approach”, Springer, 2013.

[2]. Bisi M., Goyal N. K., “Artificial Neural Network Applications for Software Reliability Prediction”, Scrivener Publishing, Wiley, 2017

[3]. Rajkumar S., Goyal N. K., "Interconnection Network Reliability Evaluation: Multistage Layouts", Scrivener Publishing, Wiley, 2020

PAPERS IN JOURNAL

[1]. Datta E., N. K. Goyal, "An efficient approach to find reliable topology of stochastic flow networks under cost constraint", International Journal of Information Technology (Singapore), *Accepted*

[2]. Chakraborty S., Goyal N.K., Mahapatra S., Soh S., "A Monte-Carlo Markov chain approach for coverage-area reliability of mobile wireless sensor networks with multistate nodes", Reliability Engineering and System Safety, *Accepted*

[3]. Chakraborty S., Goyal N.K., Mahapatra S., Soh S., "On Area Coverage Reliability of Mobile Wireless Sensor Networks with Multistate Nodes", IEEE Sensors Journal, 4992-5003, 2020

[4]. Sinha S., R. Mall, N. K. Goyal, "Reliability and availability prediction of embedded systems based on environment modeling and simulation", Simulation Modelling Practice and Theory, *Accepted*

[5]. Sajjade F.M., Goyal N.K., Varaprasad B.K.S.V.L., "Single Event Transient (SET) Mitigation Circuits with Immune Leaf Nodes", IEEE Transactions on Device and Materials Reliability, 70-78, 2021

[6]. Rajkumar S., Sathesh K., Goyal N. K., "Neural network-based design and evaluation of performance metrics using adaptive line enhancer with adaptive", Neural Computing and Applications, 15131-15153, 2020

[7]. Das T., Goyal N. K., "Prediction of Restoration Factor for Various Maintenance Types of Railway Systems using Analytical Hierarchy Process", Journal of Quality in Maintenance Engineering, 399-430, 2019

[8]. Rajkumar S., Sathesh K., Goyal N. K., "Least Mean Square (LMS) based neural design and metric evaluation for auscultation signal separation, Biomedical Signal Processing and Control, *Accepted*

[9]. Chakraborty S., Goyal N. K., Mahapatra S., Soh S., "Minimal Path-Based Reliability Model for Wireless Sensor Networks With Multistate Nodes", IEEE Transactions on Reliability, 382-400, 2020

[10]. Sajjade F.M., Goyal N.K., Varaprasad B.K.S.V.L., "Rule-Based Design for Multiple Nodes Upset Tolerant Latch Architecture", IEEE Transactions on Device and Materials Reliability, 680-687, 2019

[11]. Sinha S., R. Mall, N. K. Goyal, "Early prediction of reliability and availability of combined hardware-software systems based on functional failures", Journal of Systems Architecture, 23-38, 2019

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[15]. Datta E., N. K. Goyal, "Sum of disjoint product approach for reliability evaluation of stochastic flow networks" International Journal of System Assurance Engineering and Management, Vol. 8, pp. 1734-1749, 2017

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[1]. Sajjade F. M., Goyal N. K., Varaprasad B., "Goal-Based Approach for Selection or Design of An RHBD Latch Circuit A Tutorial", 5th IEEE International Conference on Inventive Computation Technologies (ICICT), Coimbatore, India, 1007-1013, 2020

[2]. Sinha S., Goyal N. K., Mall R., "Early Prediction of Reliability/Availability for Embedded System Based on Conceptual Design", Proceedings of the 29th European Safety and Reliability Conference (ESREL 2019), 2797-2804, 2019

[3]. Krishna S., Goyal N.K., Dhar S., "Software Reliability Growth Modeling: Comparison between Non-Linear- Regression Estimation and Maximum-Likelihood-Estimator Procedures" SAE Technical Papers, 2018

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[9]. Pandey A. K. and N. K. Goyal, "Test Effort Optimization by Prediction and Ranking of Fault-prone Software Module", Proceedings of 2nd IEEE International Conference on Reliability, Safety and Hazard, Mumbai (India), pp 136-142, Dec 2010.

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[15]. Patowari P. and N. K. Goyal, "Dynamic Thermal Rating and Allowable Operating Time under Transient Conditions", 18th National Power Systems Conference (NPSC 2014), Dec. 2014