Dr. Pooja Singh   **Address for Correspondence**
Name before marriage: Ms. Hitesh Rajput   Girnar-33
                                                                          Anushaktinagar,
                                                                          BARC Campus,
                                                                          Mumbai - 400094

E-mail   : poojasingh1615@gmail.com/ pdsingh@hs.vjti.ac.in
Mobile No. : +91 9869901055/+91 9757237734

OBJECTIVE: To be at the forefront of **technology**, research opportunity in an esteemed research/academic organization or industry that utilizes my skills to influence the organizational research growth and also to help enhancing my aptitudes and technical/research knowledge and industrial research exposure.

WORK EXPERIENCE

Currently working as an Assistant Professor in Department of Mathematics, Veermata Jijabai Technological Institute, Matunga, Mumbai.

Approximately twenty years of experience in Teaching, Software Design, Development, Integration and Testing. IoT, AI, Dependability Engineering. Having experience in developing OOPs applications using C/C++, VC++ on Windows Platform. Worked in the following companies/organizations:

- Worked for **"Nuclear Power Corporation of India Limited, Department of Atomic Energy, Government of India"** as a **'Consultant'**. Studied and worked on mathematical modeling for systems related to Nuclear Power Plant.

- Worked for a CMM level - 5 software company **"*Patni Computer Systems Ltd.*"**, Mumbai as a **'*Software Engineer*'** on project **"Midrange Columbia Admin Development for EMC"** in C++/VC++.

- Worked for CMM level – 5 software company **"Blue Star InfoTech Ltd."**, Mumbai as a **'Software Engineer'** on project **"Enhancement of Ultrasonic machine"** in VC++

- Worked for a start-up software company **"Citius Tech Pvt Ltd."**, Mumbai as **'Software Developer'**.

- Worked for **"Bhabha Atomic Research Centre, Department of Atomic Energy, Government of India"** as a '**Researcher**' in the area of Image Processing.

- Worked as Assistant Professor in Department of Applied Mathematics, Smt. Indira Gandhi College of Engineering, Mumbai University

EDUCATIONAL QUALIFICATION

- Completed Master of Science (M.Sc.) from Maharishi Dayanand Saraswati (MDS) University in **Mathematics**, securing **67.5%** aggregate and with **distinction** in final year.

- PhD in **'Digital Image Processing'** from Department of Mathematical Sciences, **IIT (BHU): Degree Awarded. Thesis Title** - *Alpha-Numerals Recognition: Vehicle Number Plate Recognition*

AREAS OF INTEREST:

- Statistical models and methods
- Computer programming using C/C++/VC++
- Image Processing
- Reliability Engineering
- Safety Engineering
- Performance Engineering
- Internet of Things
- Artificial Intelligence
- Mathematical Modelling

TECHNICAL COMPETENCE / SKILL SET:

Technical Papers Accepted/Published in international conference/journal:

1. Lalit Singh, Hitesh Rajput, "Dependability Analysis of Safety Critical Real-Time Systems by Using Petri Nets," *IEEE Transactions on Control Systems Technology*, 26(2), 415-426, 2017. doi:10.1109/tcst.2017.2669147 **(SCI Impact factor- 5.54). ISSN: 1063-6536** (Published date: 06 March 2017). Citations-26

2. P. Singh and L. K. Singh, "Modeling and Measuring Common Cause Failures in Measurement of Reliability of Nuclear Power Plant Systems," in *IEEE Transactions on Instrumentation and Measurement*, vol. 70, pp. 1-8, 2021, Art no. 3001608, doi: 10.1109/TIM.2021.3105265*,* **(SCI Impact factor- 4.016). ISSN:** 1557-9662

3. P. Singh and L. K. Singh, "Improved Measurement Accuracy in Critical Parameters of Safety-Critical Systems With Multisensor Data Fusion," in *IEEE Transactions on Instrumentation and Measurement*, vol. 70, pp. 1-8, 2021, Art no. 9514508, doi: 10.1109/TIM.2021.3124852. **(SCI Impact factor- 4.016). ISSN:** 1557-9662. Citations-0

4. Pooja Singh, Lalit Singh, "Reliability and Safety Engineering for Safety Critical Systems: An Interview Study with Industry Practitioners," *IEEE Transactions on Reliability*, 70(2), 643-653, June 2021. doi: https://ieeexplore.ieee.org/document/9353567 **(SCI Impact factor- 4.57). ISSN: 0018-9529** Citations-2

5. M. Tripathi, L. K. Singh, S. Singh and P. Singh, "A Comparative Study on Reliability

Analysis Methods for Safety Critical Systems Using Petri-Nets and Dynamic Flowgraph Methodology: A Case Study of Nuclear Power Plant," in *IEEE Transactions on Reliability*, doi: 10.1109/TR.2021.3109059. **(SCI Impact factor- 4.57). ISSN: 0018-9529** Citations-1

6. P. Singh and L. K. Singh, "Reliability and Safety Engineering for Safety-Critical Systems in Computer Science: A Study Into the Mismatch Between Higher Education and Employment in Brazil and India," in *IEEE Transactions on Education*, vol. 64, no. 4, pp. 353-360, Nov. 2021, doi: 10.1109/TE.2021.3057611. **(SCI Impact factor- 2.116). ISSN: 0018-9359** Citations-3

7. P. Singh and L. K. Singh, "Engineering Education for Development of Safety-Critical Systems," in *IEEE Transactions on Education*, vol. 64, no. 4, pp. 398-405, Nov. 2021, doi: 10.1109/TE.2021.3062448. **(SCI Impact factor- 2.116). ISSN: 0018-9359** Citations-3

8. Kumar, V., Singh, L. K., Singh, P., Singh, K. V., Maurya, A. K., & Tripathi, A. K. (2018). Parameter Estimation for Quantitative Dependability Analysis of Safety-Critical and Control Systems of NPP. *IEEE Transactions on Nuclear Science*, 65(5), pp. 1080 - 1090. doi:10.1109/tns.2018.2827106 **(SCI Impact factor 1.64)***. ISSN: 0018-9499,* (Published date: 16 April 2018). Citations-11

9. Rajput, H.; Som, T.; Kar, S., "An Automated Vehicle License Plate Recognition System," in **IEEE Computer**, vol.48, no.8, pp.56-61, Aug. 2015. Doi: https://ieeexplore.ieee.org/abstract/document/7185290/ **(SCI Impact factor 3.564)**. ISSN: 0018-9162 (Published date: 11 August 2015). Citations-38

10. Rajput, H.; Som, T.; Kar, S., "Using Radon Transform to Recognize Skewed Images of Vehicular License Plates," in **IEEE Computer,** pp.59-65, vol.49, no.01 January 2016. Doi: https://ieeexplore.ieee.org/document/7383184 **(SCI Impact factor 3.564).** ISSN: 0018-9162 (Published date: 14 January 2016). Citations-13

11. Vinay Kumar, Lalit Singh, A.K. Tripathi, Hitesh Rajput "Safety Analysis of safety critical systems using state space models", in *IEEE Software*, Vol. 34(4), July 2017, pp.38-47. Doi: https://ieeexplore.ieee.org/document/7974681 **(SCI Impact factor 2.879)***.* ISSN: 0740-7459 (Published date: 11 July 2017). Citations-12

12. Pooja Singh, Lalit Singh, "Design of Safety Critical and Control Systems of Nuclear Power Plants using Petri Nets," *Nuclear Engineering and Technology, Elsevier*, Volume 51, Issue 5, August 2019, pp.1289-1296. Doi: https://www.sciencedirect.com/science/article/pii/S1738573318309276 **(SCI Impact factor- 2.341).** ISSN 1738-5733 (Published date: August 2019). Citations-4

13. Pooja Singh, Lalit Singh, "Instrumentation and Control Systems Design for Nuclear Power Plant: An Interview Study with Industry Practitioners," *Nuclear Engineering and Technology, Elsevier*, Volume 53, Issue 11, May 2021, pp. 3694-3703. Doi:

https://www.sciencedirect.com/science/article/pii/S1738573321002990 **(SCI Impact factor- 2.341). ISSN** 1738-5733 (Published date: 31 May 2021). Citations-0

14. Mohan Rao Mamdikar, Vinay Kumar, Pooja Singh, "Dynamic Reliability Analysis Framework using Fault Tree and Dynamic Bayesian Network: A Case Study of NPP," *Nuclear Engineering and Technology, Elsevier*, 2021. DOI: https://www.sciencedirect.com/science/article/pii/S1738573321005787 **(SCI Impact factor- 2.341). ISSN** 1738-5733

15. Lalit Singh, Hitesh Rajput, Gopika Vinod and A. K. Tripathi "Computing Transition Probability in Markov Chain for Early Prediction of Software Reliability," in **Quality and Reliability Engineering International, Wiley & Sons,** Vol.32, March 2016, pp.1253-1263**(SCI Impact factor 1.604). ISSN**: 0748-8017 URL: http://dx.doi.org/10.1002/qre.1793. (Published date: 12 March 2015). Citations-12

16. Hitesh Rajput, Tanmoy Som, Soumitra Kar "Fuel assembly verification for safe operation of Nuclear Power Plants," in **Nuclear Technology, American Nuclear Society,** Vol.192, No.2, Nov 2015, pp.125-132. Doi: https://www.tandfonline.com/doi/abs/10.13182/NT14-154 **(SCI Impact factor 0.786). ISSN**, 0029-5450 (Published date: 27 Mar 2017). Citations-0

17. Lalit Singh, Hitesh Rajput, "Ensuring Safety in Design of Safety Critical Computer Based Systems," in **Annals of Nuclear Energy, Elsevier,** Vol.92, 2016, pp.289-294. Doi: https://www.sciencedirect.com/science/article/pii/S0306454916300627 **(SCI Impact factor 1.776). ISSN**: 0306-4549 (Published date: June 2016). Citations-16

18. Hitesh Rajput, Tanmoy Som, Soumitra Kar "Vehicular License Plate Localization using Principal Component Analysis," in **IETE Technical Review, Taylor & Francis,** Vol.34(2), 2017 pp. 214-219. Doi: https://www.tandfonline.com/doi/abs/10.1080/02564602.2016.1166074?journalCode=titr20 **(SCI Impact factor 1.845). ISSN**, 0256-4602 (Published date: 08 Apr 2016). Citations-2

19. Lalit Singh, Hitesh Rajput, "Verification of Safety in Safety Critical Computer Based Systems: A Case Study of Nuclear Power Plant System," in **Nuclear Technology, American Nuclear Society,** Vol. 92, June 2016, pp.289-294. Doi: https://www.tandfonline.com/doi/abs/10.13182/NT15-151 **(SCI Impact factor 0.786). ISSN**, 0029-5450 (Published date: 27 Mar 2017). Citations-1

20. Lalit Singh, Hitesh Rajput, "Safety Analysis of Life Critical Software Systems: A Case Study of Nuclear Power Plant," in **IETE Technical Review, Taylor & Francis,** Vol.34(3), 2017 pp.333-339. URL: http://dx.doi.org/10.1080/02564602.2016.1190305. **(SCI Impact factor 1.845). ISSN**, 0256-4602 (Published date: 13 Jun 2016). Citations-0

21. Pooja Singh, Lalit Singh, "Impact Analysis of change in component reliabilities in Safety Critical Systems," *Quality and Reliability Engineering International, Wiley & Sons*, Vol.35, Issue 6. October 2019, pp.2051-2065. Doi:

https://onlinelibrary.wiley.com/doi/abs/10.1002/qre.2476 **(SCI Impact factor- 1.604).** **ISSN**: 0748-8017 (Published date: 23 April 2019). Citations-1

22. Pooja Singh, Lalit Singh, "Verification of Safety Critical and Control Systems of Nuclear Power Plants using Petri Nets," in *Annals of Nuclear Energy, Elsevier,* Volume 132, October 2019, pp.584-592 Doi: https://www.sciencedirect.com/science/article/pii/S0306454919303457. **(SCI Impact factor- 1.776) ISSN**: 0306-4549 (Published date: October 2019). Citations-1

23. Mohan Rao Mamdikar, Vinay Kumar, Pooja Singh, and Lalit Singh, "Reliability and performance analysis of safety-critical system using transformation of UML into state space models," *Annals of Nuclear Energy, Elsevier,* Volume 146, October 2020, 107628. https://www.sciencedirect.com/science/article/pii/S0306454920303261 **(SCI Impact factor- 1.776) ISSN**: 0306-4549 (Published date: October 2020). Citations-0

24. Brijendra Gupta, Pooja Singh, and Lalit Singh, "Stability and Steady State analysis of Control and Safety Systems of Nuclear Power Plants," *Annals of Nuclear Energy, Elsevier,* Volume 147, November 2020, 107676. https://www.sciencedirect.com/science/article/pii/S0306454920303741 **(SCI Impact factor- 1.776) ISSN**:0306-4549 (Published date: November 2020). Citations-0

25. Vinay Kumar, Ashish Kumar Maurya, Karam Veer Singh, Lalit Kumar Singh, Pooja Singh, Aditya Narayan Hati, Vibhav Prakash Singh, "Safety Analysis of safety-critical systems for their applicability on NPP systems: A state-of-the-art review," *Quality and Reliability Engineering International*, Vol. 37(5), pp.1796-1831. July 2021. Doi: https://doi.org/10.1002/qre.2828 **(SCI Impact factor- 1.604). ISSN**: 0748-8017

26. Vinay Kumar, Kailash Chandra Mishra, Pooja Singh, Aditya NarayanHati, Mohan Rao Mamdikar, Lalit Kumar Singh, R Ramakant Parida, "Reliability Analysis and Safety Model Checking of Safety-Critical and Control Systems: A Case Study of NPP Control System," *Annals of Nuclear Energy, Elsevier,* Vol. 166, Feb.2022. doi: https://www.sciencedirect.com/science/article/pii/S0306454921006897 **(SCI Impact factor- 1.776). ISSN**: 0306-4549

27. Mohan Rao Mamdikar, Vinay Kumar, Pooja Singh, Subhash Chandra, "Availability and Security Analysis of Business-critical systems: A Case Study of e-commerce Business Process," *Quality and Reliability Engineering International*, December 2021 doi: https://onlinelibrary.wiley.com/doi/abs/10.1002/qre.3052 **(SCI Impact factor- 1.604). ISSN**: 0748-8017

28. 'Overriding the Façade Pattern using Data Flow Diagram', related to software engineering and had been accepted for oral presentation in an International Conference on Computer Science & Software Engineering-Singapore, conducted by World Academy of Science, Engineering & Technology.

29. 'Evaluating & Ensuring Software Reliability Metrics in Computer Based Systems through Early Prediction', in '3rd International Conference on Computer and Electrical

Engineering (ICCEE 2010)', conducted by IEEE.

30. Hitesh Rajput, Tanmoy Som, "An Approach for Identification of Numerals using Vector Contour," in ARPN Journal of Systems and Software, vol. 2 no. 7, pp.228-235, July 2012 doi: http://scientific-journals.org/journalofsystemsandsoftware/Download_July_pdf_5_2012.php. **ISSN** 2222-9833

31. Hitesh Rajput, Tanmoy Som, Soumitra Kar, "Offline Character Recognition using Monte Carlo Method and Neural Network," in International Journal of Artificial Intelligence & Applications, vol.4, No.3, pp.23-38, May, 2013. Doi: http://airccse.org/journal/ijaia/papers/4313ijaia03.pdf. **ISSN** :0976 - 2191

32. Hitesh Rajput, Tanmoy Som, Soumitra Kar, "An Approach for Feature Extraction of Alpha-Numeric by Using Snakes and Principal Component Analysis for Its Recognition", International Journal of Artificial Intelligence and Mechatronics, vol.2, No.2, pp.31-36, Sept, 2013. Doi: https://www.ijaim.org/administrator/components/com_jresearch/files/publications/IJAIM_166_Final.pdf **ISSN**: 2320-5121

33. Hitesh Rajput, Lalit Singh, "An Approach to find the Transition Probabilities in Markov Chain for Early Prediction of Software Reliability," in International Journal of Latest Research in Science and Technology, Volume 2, Issue 6: Page No.111-115, November-December 2013. Doi: https://www.semanticscholar.org/paper/AN-APPROACH-TO-FIND-THE-TRANSITION-PROBABILITIES-IN-Rajput-Singh/a94eeb3216a1042d982c0b236fc7a596dd00c156 **ISSN**: 2278-5299

34. Hitesh Rajput, Lalit Singh, "Improvement of Software Quality Attributes in Object Oriented Analysis and Design Phase Using Goal-Question-Metric Paradigm" in Improvement of Software Quality Attributes in Object Oriented Analysis and Design Phase Using Goal-Question-Metric Paradigm. Doi: https://www.scirp.org/journal/paperinformation.aspx?paperid=5674. **ISSN**: 1945-3124

Design Tools	Basic idea about Unified Modeling Language(UML)
Languages	C, C++, VC++
Advanced Software Technologies	Implementing Dynamic Link Libraries(DLLs) CPPUnit, a test framework, used to test the code (Unit Testing), Rational ClearCase
Operating System	Windows NT 4.0, Windows'9x, Window 2000, Windows XP
General	Microsoft Word, Microsoft Excel.
Networking	Basics
Data Structures	Stacks, Queues and Link Lists

Sponsored Projects:

Sl. No.	Period	Sponsoring Organization	Title of Project	Amount of Grant
1	01/12/2014 to 30/11/2015	Bhabha Atomic Research Centre (BARC)	An Automated Vehicle License Plate Recognition System	15 lacs
2	04/12/2015 to 30/12/2016	Bhabha Atomic Research Centre (BARC)	Skewed Vehicular Number Plate Detection and Recognition	15 lacs
3	02/1/2017 to 28/12/2018	Bhabha Atomic Research Centre (BARC)	Vehicular License Plate Localization using Principal Component Analysis	15 lacs
4	05/6/2019 to 29/5/2020	Bhabha Atomic Research Centre (BARC)	Fuel assembly verification for safety operation of Nuclear Power Plants	20 lacs
5	01/08/2019 to 30/07/2020	Bhabha Atomic Research Centre (BARC)	Verification of Safety in Safety Critical Computer Based Systems	15 lacs
6	02/09/2019 to 30/9/2020	NPCIL, Department of Atomic Energy, Government of India	Reliability Analysis of safety critical systems	15 lacs
7	22/10/2020 to 25/10/2021	NPCIL, Department of Atomic Energy, Government of India	Safety Analysis of safety critical systems	15 lacs

Patent Granted:
1. A Framework for Reliability and Performance Analysis of Safety-Critical Systems using Stochastic Modeling.
   a. **Inventors** - Vinay Kumar, Mohan Rao Mamdikar, *Pooja Singh*, Ashish Kumar Maurya, Vibhav Prakash Singh, Aditya Narayan Hati.
   b. **Application No.** 202031014381
   c. **Application date:** 31/03/2020
   d. **Published date:** 15/05/2020
   e. **Name of Patent Agency:** Controller General of Patents, Design and Trademarks, Dept. of Industrial Policy and Promotion, Ministry of Commerce and Industry

Outstanding achievements:
   1. Looking at my research potential, first time Bhabha Atomic Research Centre (BARC),

Department of Atomic Energy, Government of India has agreed for my joint research with IIT(BHU) and permitted me to carry out my research work in BARC laboratory.
2. My research work was industry oriented, which I had transformed into 4 tools that are under operational phase in different units of Department of Atomic Energy, Government of India.
3. I completed 6 projects from BARC and NPCIL, total value is more than 1 crore.

Awards:
1. Got IIT (BHU) publication award, 2nd prize, Feb 2013.

Supervisor (M.Tech student)
1. 1 M.Tech student of VJTI Mumbai

Supervisor (PhD student)
1. 1 PhD student of NIT Jamshedpur (Topic: Reliability analysis of safety critical systems)
2. 1 PhD student of NIT Jamshedpur (Topic: Safety analysis of safety critical systems)

Technical Program Committee member
1. 4th International Conference on Computer Science and Information Engineering (ICCSIE2019), held on 27-28 September, 2019 at Beijing, China, organized by Beijing University of Technology

Reviewer
1. ACM Transactions on Software Engineering and methodology
2. IEEE Transactions on Vehicular Technology
3. IEEE Transactions on Intelligent Transportation Systems
4. IEEE Transactions on Control Systems Technology
5. IEEE Transactions on Systems, Man and Cybernetics: Systems
6. IEEE Transactions on Reliability
7. IEEE Transactions on Industrial Electronics
8. IEEE Transactions on Power Systems
9. IEEE Transactions on Aerospace and Electronic Systems
10. IEEE Transactions on Computer-Aided Design of Integrated Circuits and Systems
11. IEEE Transactions on Technology and Society
12. IEEE Transactions on Education
13. IEEE Computer
14. IEEE Consumer Electronics Magazine
15. IEEE Sensors Journal
16. IEEE Access
17. Reliability Engineering & System Safety, Elsevier
18. Annals of Nuclear Energy, Elsevier
19. International Journal of Industrial Ergonomics, Elsevier
20. IET Image Processing
21. Artificial Intelligence Review, Springer
22. IETE Technical Review, Taylor & Francis
23. International Journal of Software Engineering and Knowledge Engineering
24. British Journal of Applied Science & Technology

25. Quality and Reliability International, Wiley

Member of Advisory committee
1. Acts as a member of Advisory committee in IEEE sponsored Workshop on "Big Data Analytics with Hadoop", in SHri Shankaracharya Technical Campus, Bhilai.

Life-Time Membership
Indian Nuclear Society

Guest Editor
Acts as a Guest Editor of a special issue "Recent Trends of Safety and Reliability in Computer Based Safety-Critical Systems" of "American Journal of Software Engineering and Applications (AJSEA)".

PERSONAL SKILLS:

Date Of Birth	: September 17, 1977
Sex	: Female
Nationality	: Indian

- Comprehensive problem solving abilities, willingness to learn, Team Facilitator.

PROJECT EXPERIENCE RELATED TO IMAGE PROCESSING:

1. Fuel assembly verification for safety operation of Nuclear Power Plants
Published in Nuclear Technology, American Nuclear Society (SCI international journal) journal

2. Automated Vehicle Licence Plate Recognition System
Published in IEEE Computer (SCI international journal) journal

3. Skewed License Plate Recognition System
Published in IEEE Computer (SCI international journal) journal

4. Locating License plate of moving Vehicles
Published in IETE Technical Review @ Taylor & Francis (SCI international journal) journal

5. Computing Transition Probability in Markov Chain for Early Prediction of Software Reliability
Published in Quality & Reliability Engineering International (SCI international journal) journal

6. Verification of Safety in Safety Critical Computer Based Systems: A Case Study of Nuclear Power Plant System
Published in Nuclear Technology, American Nuclear Society (SCI international journal) journal

7. Ensuring Safety in Design of Safety Critical Computer Based Systems

Published in Annals of Nuclear Energy, Elsevier (SCI international journal) journal

Dr. POOJA SINGH