Curriculum Vitae

Name : **Prof. Nirmal Kumar Singh**
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Education and Professional Qualification

Examination	Board/University	Year of Passing	Division and Percentage	Subject taken
BSSE(10th)	AK Jain High School, Darihat Rohtas (BSEB, Patna) India	1978	1st Div. and 67% *(Topped in the school)*	Physics, Chemistry, Maths, English, Sanskrit, Hindi and Social Studies
AISSC(+2)	Central Hindu (Boys) School Varanasi (CBSE ,NewDelhi, India)	1980	1st Div. and 67.6 %	Physics, Chemistry, Maths, English & Sanskrit
B.Sc.(Hons.)Part – I	BHU, Varanasi, India	1982	1st Div. and 68.5%	Phy., Chem., Maths & English
B.Sc. Engg. (Mech.)	RIT (Now NIT)Jamshedpur, India	1987	1st Div. with Distinction and 73.5%	Mechanical Engg. with Specialization in Optimization and Operations Research, Automobile Engg. and Solar Energy
Ph.D.(Engg)	Jadavpur University Kolkata, India	1999 (02.06.99)	Passed PhD Qualifying Examination1995 - 96	PhD topic on **Process Capability Analysis** (Industrial/Production/Quality Engineering)

- **Additional Qualification** : Part-time PG Diploma in Statistical Quality Control (SQC) from Indian Association for Productivity Quality &Reliability (IAPQR) Kolkata India in May,1991.
- **Research Experience For Ph.D.(Engg.)** : I have done research for Ph.D.(Engg) in the Mechanical Engineering Department of Jadavpur University, Kolkata India on Process Capability Analysis i.e. in the area of industrial/production Engineering (Statistical Process Control) under the guidance and supervision of Prof S.P. Mukherjee(Awarded by the Prime Minister of India for life time achievement in various areas of statistics in 2012), Former Centenary Professor of Statistics(Retired), Calcutta University, Kolkata India and International Quality Expert(August,1991– August,1997) and Prof (Dr.) A. Bhattacharya, Professor(Retired) of Mechanical Engineering (Production Specialization) (March, 1995 – Aug.,1997) Jadavpur University, Kolkata India(Thesis submitted on 7th August,1997).

Working Experience:

Employer/ Organisation	Post Held /Designation	Period	Pay / Pay Scale	Nature of Duties
M/s Vankos& Co. 13/2, Industrial Estate Patna – 822 013 (Private Company), Bihar, India	Graduate Engineer Trainee and Probationary Engineer (Production)	05.10.1987 to 05.12.1989 (2years 2months)	Rs.1000/- per month	Supervision in Machine Shop for production of various components of hydraulic jacks
SQAO, SQAE(GS), DGQA Complex (Min. of Defence), Govt. of India, Hastings, Kolkata -700022,W.B., India	Chargeman Grade–II (Store Inspector/ Technical Assistant/Junior Engineer)	11.12.1989 to 02.04.2001 (11years 4months)	INR5000-150-8000 GP 4200	Quality Assurance of General Stores including Mechanical Engineering stores which are supplied to Defence Forces of the Nation
Advanced Training Institute (Govt. of India, Min. of Labour, DGE & T), Dasnagar, Howrah -711105,WB, India (Now DGT under Ministry of Skill Development	Assistant Director of Training (**Direct appointment by the UPSCGroup'A' Gazettedpost/placed in**	03.04.2001 to 14.01.2008 (6 years 9 months)	INR15600-275-39100 GP 5400	(i)Planning, organizing, coordinating, conducting short-term courses on Metrology,SQC,ISO9000,TQM,SixSigma (ii) Conducted long term course on

&Entrepreneurship Govt. of India)	**first position in the list of selected candidates in July, 2000**) (Now Indian Skill Development Service)			Principle of Teaching. (iii)Involved in administrative/technical matters related to Craftsmen and Instructor Training, Admissions, Trade Testing(Exams) and Placement etc.
Indian Institute of Technology(Indian School of Mines) Dhanbad – 826004 India (Central Workshop/Deptt. of Mechanical Engg.) Jharkhand,India (Autonomous Institute under the Govt. of India, Ministry of Education)	Assistant Professor (Workshop)/ Sectional Head of the Central Workshop	15.01.2008 to14.01.2011 (03 years)	INR15600-39100 GP 8000 TotalEmoluments:INR68848/-plus other benefits per month.	Conducted Practical Training in the Central Workshop, Conducting theoretical and/or practical classes related to Manufacturing Process and Maintenance Engineering& Quality Engg. and Management /Measurement and Control for Undergraduate /Postgraduate students and their project works. Management & administration of Central Workshop(15.01.2008-31.07.2018) and Vehicle Section (30.07.2015-23.05.2018) as Sectional Head including planning and execution for the fabrication of furniture etc. and shifting of laboratories. Renovation and development of laboratories in workshop. Taken classes in short Term courses. Miscellaneous duties as assigned by Director/Registrar/HOD. Conducting Practical Training in the Central Workshop, Conducting theoretical and / or practical courses related Manufacturing Process and Maintenance Engg& Quality Engg. and Management / Measurement and Control, Reliability, Availability, Maintainability and Safety (RAMS) for Undergraduate /Postgraduate students and their project works. Conducted theoretical classes on Research Methodology and Statistics for JRFs. Guiding/ supervising of 05 Nos. of PhD scholars. 08 Nos. of PhDs produced. Miscellaneous duties as assigned by Director/ HOD. -Do-
	Associate Professor (Workshop)(Under CAS)/ Sectional Head of Central Workshop	15.01.2011 to 08.03.2015 (4 years 2 months)	INR 37400-67000 (PB-4) Band pay: 43300 INR + Grade Pay:9500 INR plus other benefits per month.	
	Associate Professor (Workshop)(IIT Scale)/Sectional Head of the Central Workshop (upto 31.07.2018) And Vehicle Section (23.07.15-25.05.18)	09.03.2015 to 31.07.2018 (03 years& 5 months as on date)	Academic Pay Level : $13A_2$ Basic Pay :176900/- Total Emoluments: **2.563 lakhs** INR (approx.)per month exclusive of HRA plus other benefits(as 7thPay Commission recommendations) plus pensioner's benefits.	
	Associate Professor (IIT Scale)/ Mech.Engg Warden Diamond Hostel from 01.07.2019 to 30.06.2021	01.08.2018 to till date	-Do-	
	Professor	17.08.2023	Pay level :14A Basic Pay :190000/- Total Emoluments: **2.962 lakhs** INR (approx.) per month exclusive of HRA	-Do-

Meetings participated

(1) Participated a meeting of the Committee to review The First Schedule of The Factories Act 1948 on 22.03.2017 in Directorate General of Factory Advice Service and Labour Institutes(under the Ministry of Labour& Employment Govt. of India) Mumbai as a representative of IIT(ISM) Dhanbad.

(2) Participated in XII Academic Council Meeting of Government Tool Room and Training Centre Dumka and XIV Academic Council Meeting of MSME Tool Room and Training Centre Ranchi on 16.05.2018 as representative of IIT(ISM) Dhanbad.

(3) Participated three Academic Council Meetings of Government Tool Room and Training Centre Dumka and /or Jharkhand Govt. MSME Tool Room and Training Centre Ranchi as representative of IIT(ISM) Dhanbad in past.

Research Publications

(i) Research publications in Journals of Web of Science Database(SCIE/SCI)

1. Mukherjee, S.P. and Singh, N.K., 1997-98.Sampling properties of an estimator of a new process capability index for Weibull distributed quality characteristics. *Quality Engineering*, 10(2),pp. 291-294. ASQ and Taylor &Francis https://doi.org/10.1080/08982119708919136. (SCIE IF: 1.32). Q2(Statistics & Probability)/Q3(Industrial Engg)

2. Ghosh, A., Chattopadhyaya, S., and Singh, N. K., 2012. Assessment of heat affected zone of submerged arc welding processthrough digital image processing. *Defect and Diffusion Forum*, 326-328, pp. 400-404. Durnten-Zurich Switzerland Trans Tech Publications, Switzerland doi:10.4028/www.scientific.net/DDF.326-328.400. (SCIE IF:.0.712) Q3
3. Ghosh, A, Chattopadhyaya, S.,and Singh, N. K.,2012. Prediction of weld bead parameters, transient temperature distribution and HAZ (heat affected zone) width of submerged arc welded structural steel plates.*Defect and Diffusion Forum*,326-328 pp. 405-409.Durnten–Zurich Switzerland Trans Tech Publications, Switzerland doi:10.4028/www.scientific.net/DDF.326-328.400 (SCI IF: 0.712) Q3

4. Tiwari, V. and Singh, N. K.,2016. Process Capability Index for Bivariate Exponentially Distributed Quality Characteristics and its Sampling Properties.*Communications in Statistics – Theory and Methods*, 46(3),pp. 11099-11109(Online since 2016)

https://doi.org/10.1080/03610926.2016.1257717. (SCIE IF:0.612) Q4

5. Kumar, V., Hussain, M., Mohammad,S. R., Das, A. K., and Singh, N.K.,2016. Fiber laser welding of thin nickel sheets in air and watermedium. *Arabian Journal for Science and Engineering*, 42, 1765–1773, https://doi.org/10.1007/s13369-016-2305-1(Online since 30.08.2016) (SCIE IF: 1.518) Q3

6. Bajpai, V., Yadav, A., Kumar, M., and Singh, N.K., 2017. FE modeling of burr size in high- speed micro-milling of Ti6Al4V.*Precision Engineering*,49 pp. 287-292.https://doi.org/10.1016/j.precisioneng.2017.02.017(SCIE IF: 2.8) Q2

7. Kumar, H.Ahmad, G.N., and Singh,N. K., 2018. Activated flux TIG welding of Inconel 718 super alloy in presence of tri-component flux. *Materials and Manufacturing Processes*,34 (2),pp. 216-223. https://doi.org/10.1080/10426914.2018.1532581. (SCIE) (IF: 2.7) Q2

8. Taye, D.,Mohanty, S., Das, A.K.,and Singh, N. K. 2019. Electroless Ni-Al2O3 WS_2 composite coating on aluminum substrate. *Transactions of The Indian Institute of Metals*,72, pp. 2281–2292. (Online from 17.04.2019) DOI:10.1007/s12666-019-01677-1(SCIE IF:1.17).Q3

9. Sharma, P.,Chattopadhyaya, S., and Singh, N. K., 2019. A review on magnetically supported gas metal arc welding process for magnesium alloys.*Materials Research Express*6(8), https://doi.org/10.1088/2053-1591/ab1e67 082002 (IF: 1.449) (SCIE) Q3.

10. Sharma,P.,Chattopadhyaya, S., and Singh, N. K. (2019). Optimization of Gas metal arc welding parameters to weld AZ31B alloy using response surface methodology. *Materials Research Express*, 6(10) 106569 https://doi.org/10.1088/2053-1591/ab3887 (SCIE)(IF:1.449) Q3

11. Ahmad, G.N.,Mohammad, S. R., Singh, N. K.,and Kumar, H., 2020. Experimental investigation on Ytterbium fiber laser butt welding of Inconel 625 and duplex stainless steel 2205 thin sheets. *Optics and Laser Technology*,126 pp.106117. https://doi.org/10.1016/j.optlastec.2020.106117 (SCIE: IF 3.3) Q1

12. Kar,T., Mandal, N. K.,Singh, N.K., 2020. Multi-response optimization and surface texture characterization for CNC Milling of Inconel 718 alloy. *Arabian Journal for Science and Engineering*,45, pp. 1265–1277 doi.org/10.1007/s13369-019-04324-5 (SCI: IF-1.518) Q3

13. Kumar, D., Singh, N.K., and Bajpai, V., 2020. Recent trends, opportunities and other aspects of micro-EDM for advanced manufacturing: a comprehensive review. *J Braz. Soc. Mech. Sci. Eng.*, 42(5),pp. 222 https://doi.org/10.1007/s40430-020-02296-4 (SCIE IF: 1.743 Mech Engg.Q2(CA).
14. D. Kumar, Rai, R.S., Singh*, N.K., 2020. An innovative approach to deposit ultrathinZnO nano-flakes (2D) through hydrothermal assisted electrochemical discharge deposition and growth method. *Ceramics International*,46(16), pp.26216-26220 https://doi.org/10.1016/j.ceramint.2020.07.009(SCI IF: 3.83) Q1. (CA)

15. Mandal, N. K., Singh, N.K., Tarafdar, N. H., Hazra A., 2020.Correlating tool wear and surface integrity of a CNC turning process using Naïve Bayes classifiers. *Proceedings of The Institution of Mechanical Engineers, Part B:Journal of Engineering Manufacture*, Vol. 235(5) pp.772-781 (SCI IF: 1.982) https://doi.org/10.1177/0954405420972980 Q2

16. Sharma, P., Chattopadhyaya, S.,Singh, N. K.Marta Bogdan-Chudy, Grzegorz Krolczyk, 2020.The effect of external magnetic field on aspect ratioand heat input of Gas Metal Arc welded AZ31B alloy weld joints using response surface methodology. *Materials(MDPI)*, *13*(22), 5269 ; (SCI IF: 3.057) Q1https://doi.org/10.3390/ma 13225269.

17. D., Kumar, Bajpai, V, Singh, N.K, 2021.Nano Electrical Discharge Machining-The Outlook, Challenges, and Opportunities. *Materials and Manufacturing Processes*.pp-1-36,DOI:10.1080/10426914.2021.1905832 Q2. (CA)

18. Deepak Kumar, Ravi Shankar Rai, VivekBajpai, Nirmal Kumar Singh 2021.Mass fabrication of 2D nanostructure (ZnO) in chemical growth solutionusing tip induced lithography.*Materials and Manufacturing Processes*.pp.177-185,https://doi.org/10.1080/10426914.2021.1960993 Q2(CA).

19. Gulshad Nawaz Ahmad, Mohammad ShahidRaza, N K Singh, GopinathMuvvala 2021·Investigating the effect of process parameters on weld pool thermal history and mechanical properties of laser welded Inconel 625 and Duplex stainless steel 2205 dissimilar welds.Optik - International Journal for Light and Electron Optics 248 https://doi.org/10.1016/j.ijleo.2021.168134 Q2(CA).

20. D., Kumar, , Singh, N.K, Bajpai, V. 2022.Achieving nano-patterned features by micro-EDM process using vertically aligned ZnOnanorods grown on microprobe tip: a scaling approach.*Microelectronic Engineering* 260 (2022) 111792,https://doi.org/10.1016/j.mee.2022.111792 Q2.

21. Pankaj Sharma, SomnathChattopadhyaya, Nirmal Kumar Singh, Ashok Kumar, Shubham Sharma, Changhe Li, Vineet Kumar, SzymonWojciechowski, GrzegorzKrólczysk, SayedM.Eldin 2022. Recent developments in the design, development, and analysis of the influence of external magnetic-field on gas-metal arc welding of non-ferrous alloys: review on optimization of arc-structure to enhance the morphology and mechanical properties of welded joints for automotive applications, Heliyon, 8(12) e11812, https://doi.org/10.1016/j.heliyon.2022.e11812.(Q1)

22. Rajesh Sahoo, Nirmal Kumar Singh, VivekBajpai, 2023. A novel approach for modeling MRR in EDM process using utilized discharge energy. Mechanical Systems and Signal Processing, 185 (2023) 109811 https://doi.org/10.1016/j.ymssp.2022.109811 (IF:8.9(Q1)

23. Ahmad GN Singh N K et al. 2023 Monitoring of thermo-cycles in fibre laser welding of duplex stainless steel 2205 sheets and its correlation with microstructures and mechanical properties" Materials Research Express Vol. 10 No. 10 DOI 10.1088/2053-1591/ad0095 Impact Factor: 2.3 (Q3).

24. D., Kumar, Singh, N.K, 2023. A novel maglev μ-EDM and its signal processing for machine condition monitoring on duplex stainless steel (DSS-2205). Mechanical Systems and Signal Processing. Impact Factor: 8.9(Q1). Under revision

25. Kumar Deepak, Kumar Mohan, Singh, N.K, 2023.Geometrically irregular nanopatterning through novel maglev EDM using ZnOnanopillars: A feasibility study towards nano-EDM. Materials Science in Semiconductor Processing Vol.169/107924 https://doi.org/10.1016/j.mssp.2023.107924 Vol. 169 Impact Factor: 4.5 (Q1).

26. Rajesh Sahoo, Nirmal Kumar Singh, Vivek Bajpai, 2023. Approach towards green manufacturing in Maglev EDM using different bio-degradable dielectrics at variable discharge conditions. Journal of Cleaner Production Vol. 430/ 139623 https://doi.org/10.1016/j.jclepro.2023.139623 Impact Factor: 11.1 (Q1).

(ii) Research publications in Journals of Scopus Database

27. Mukherjee, S.P. and Singh, N.K., 1994.Sampling properties of an estimator of bivariate process capability index.*Economic Quality Contro*l,(Now *Stochastic and Quality Control*), 9(2), pp. 73-78. Wurzburg, Germany, ISSN (printed): 0940-5151. ISSN (electronic): 1869-6147/Online ISSN: 2367-2404 Print ISSN: 2367-2390(Scopus).

28. Ghosh A., ChattopadhyayaS.,and Singh, N. K., 2011. 3rd degree mathematical model appropriate for parametric estimation of SAW process.*Advanced Materials Research(Materials and Design), 284-286,* pp. 2473-2476, Trans Tech Publication Durnten-Zurich, Switzerland DOI: 10.4028/www.scientific.net/AMR.284-2862473(Scopus).

29. Danish M., Pingali, V. K., Chattopadhyay, S., Singh, N. K., and Ray, A.K.2012. Idealisation and formulation in structural dynamics using modal analysis. *Advanced Materials Research*,418-420 (2012) pp. 1022-1025. (Online available since 2011/Dec/06 at www.scientific.net)Durnten-ZurichTrans Tech Publications, Switzerland doi:10.4028/www.scientific.net/AMR.418-420.1022 (Scopus).

30. Mukhopadhyay, P., Chattopadhyaya, S.,Bhatia. S., Singh,N. K. and Mukhopadhyay, A.K.,2013. Prediction of weldparameters in gas metal arc welding process using curve fitting techniques and graphical methods.*Advanced Materials Research,* 652-654pp. 2352-2356.doi:10.4028/www.scientific.net/AMR.652-654.235.2Trans Tech Publications ,Switzerland(Scopus).

31. Vates, U.K. and Singh, N.K., 2013. Optimization of surface roughness process parameters of electrical discharge machining of EN-31 by response surface methodology.*International Journal of Engineering Research and Technology*, 6(6), pp.835-840 ISSN: 0974-3154https://www.ripublication.com/irph/ijert_spl/ijertv6n6spl_17.pdf(Scopus)

32. Vates, U. K, Singh N. K. and Singh, R.V., 2014. Effect of alloying content on surface roughness of die materials at optimal parametric condition using WEDM.*International Journal of Applied Engineering Research* 9(19),pp.5301-5312 (Scopus)

33. Vates, U. K, Singh, N. K. and Singh R.V., 2014. ANN Modelling and Optimization of Ra with MRR on HSS T42 Steel using WEDM process.*International Journal of Mechanical & Mechatronics Engineering*, 14(03) pp. 114-128. https://ijens.org/Vol_14_I_03/1410501-1403-6767-IJMME-IJENS.pdf(Scopus).

34. Vates, U. K, Singh, N. K. and Singh R.V., 2014. Modelling and prediction of Ra of EN31 in wire electrical discharge machining using ANN and MSE approach. *International Journal of Applied Engineering Research*, 9(21),pp. 9273- 9296 (Scopus).

35. Tripathi B. N., Vates, U.K., Singh, N.K., 2015. Ra Modelling and optimization of Honda bike cylinder liner in honing using RSM & RSME Technique.*International Journal Applied Engineering Research*, 10(8), pp.1087-1090.ISSN: Print 0973-4562 online (Scopus).

36. Tripathi, B. N., Singh, N. K., 2015. Surface roughness influencing process parameters and modeling techniques for four stroke motor bike cylinder liners during honing: Review'*International Journal of Mechanical & Mechatronics Engineering*, 15(01), pp.106-112. ISSN: 2077-124X (Online) 2227-2771(Scopus).

37. Danial, N. A. Singh, N. K., and Vates, U. K.2015. Parametric optimization & simulation of mild steel cup in deep-drawing using LS-Dyna. *International Journal of Applied Engineering Research* 10(9),pp. 24479-24489. (Scopus).

38. Vates, U. K, Singh, N. K. and Singh R.V., 2016. Modelling and optimization of wire electrical discharge machining process on D2 Steel using ANN and RMSE Approach. *International Journal of Computational Materials Science and Surface Engineering*, 6(3/4), pp.161-185. (Scopus).

39. Tripathi, B. N. and Singh, N. K., 2015. Experimental investigation of surface roughness of cylinder liner for HT 100material using RSM Technique.*International Journal of Applied Engineering Research*,10(18),pp. 39239-39246. (Scopus).

40. Swati and Singh, N. K., (2015).Gas metal arc welding process: review of historical and recent development.*International Journal of Applied Engineering Research*,10(23),pp. 43722-43725. (ISSN0973-4562)Research India Publications.(Scopus)

41. Kumar, P. Kumar, M., Bajpai, V., and Singh, N. K., 2017. Recent advances in characterization, modeling and control of burr formation in micro-milling.*Manufacturing Letters*,13, pp. 1-5.https://doi.org/10.1016/j.mfglet.2017.04.002 (Scopus)

42. Mandal,,N. K., Mondal, M., and Singh, N. K., 2017. Modelling and optimisation of a sustainable manufacturing process with CNC turning centre.*International Journal of Applied Environmental Sciences*,12(6), pp. 1101-1116. ISSN 0973-6077 https://www.ripublication.com/ijaes17/ijaesv12n6_05.pdf(Scopus)

43. Kumar,H. and N. K. Singh (2017): "Performance of activated TIG welding in 304 austenitic stainless steel welds. *Materialstoday: PROCEEDINGS* 4(9), pp. 9914-9918. https://doi.org/10.1016/j.matpr.2017.06.293 (Scopus).

44. Mandal, V.,Hussain M., Kumar, V., Das, A. K.,and Singh, N. K. 2017. Development of reinforced TiN-SS316 metal matrix composite (MMC) using direct metal laser sintering (DMLS) and its characterization" *Materialstoday: PROCEEDINGS* 4 pp. 9982–9986. https://doi.org/10.1016/j.matpr.2017.06.306 (Scopus).

45. Ranjan,R. Singh, N. K.Jaiswal,A.P.,andBajpai.,V., 2018. Metal matrix nano composites using graphene nano platelets indented on copper particle in aluminum matrix. *Advanced Materials Letters*, 9(9), pp. 652-655. DOI: 10.5185/amlett.2018.2078(Scopus)(CA)

46. Ahmad,G.N., Padman, J., Raza,M.S., Kumar,A., and Singh, N. K., 2018. Analyzing the effect of tool pin design and process parameters on the microstructural and mechanical properties of friction stir welded 6061 aluminum alloy. *IOP Conference Series: Material Science and Engineering*, 377, 012059 DOI: 10.1088/1757-899X/377/1/012059(Scopus).

47. Kumar, V., Kumar, A., Kumar, S., and Singh, N. K., 2018. Comparative study of powder mixed EDM and conventional EDM using response surface methodology.*Materialstoday:PROCEEDINGS*Volume 5, Issue 9, Part 3,pp 18089-18094 https://doi.org/10.1016/j.matpr.2018.06.143 (Scopus)

48. Kumar, S., Kumar, A., Kumar, V. and Singh, N.K., 2018. Study of machining of INCONEL825 super alloy using powder mixed EDM process" *Materialtoday: PROCEEDINGS*,5(9) part 3,pp. 18129-18134https://doi.org/10.1016/j.matpr.2018.06.148 (Scopus)

49. Daniel, N.A., Singh, N.K., Vates, U.K., Sharma, B.P., Subramanian, S. 2019. Optimization of critical parameters of EDD Steel in die cavity manufacturing" *Advances in Industrial and Production Engineering, Lecture Notes in Mechanical Engineering,* pp. 357-363,Springer, Singapore (Select Proceedings of FLAME 2018) (Q4 IF: 0.13)(Scopus)https://doi.org/10.1007/978-981-13-6412-9_34

50. Sharma,P.Singh, N.K., Das, A.K, 2019. Optical characterization of copper doped lead oxide nanoparticle generated through ECDM process.*International Journal of Engineering Research & Technology*,7(3) AMDMM-2019 Q3ISSN (Online): 2278-0181. (Scopus)

51. Singh, N.K., 2019. Process Capability Index for Geometrically Distributed Quality Characteristics. *Advances in Computational Methods in Manufacturing, Lecture Notes on Multidisciplinary Industrial Engineering,* 1023-1030. Springer, Singapore doi.org/10.1007/978-981-32-9072-3_86 pp.1023-30(Online from 18.10.2019)(eBook)Scopus).

52. Kumar, D., Kumar, S., Kumar, D.andSingh, N.K., 2020. Effect of Two Different Dielectrics on the Machining Performance and Their Parametric Optimization through Response Surface Methodology. *Advances in Materials and Manufacturing Engineering. Lecture, Notes in Mechanical Engineering pp-39-40.* Springer, Singapore https://doi.org/10.1007/978-981-15-1307-7_4 (Scopus).

53. Ahmad, G.N., Kumar, H., and Singh, N. K., 2020. Microstructure and Mechanical Characterization of Laser Welded Dissimilar Joint of DSS 2205 and Inconel 625 Sheets.AIP Conference Proceedings 2273, 050020 https://doi.org/10.1063/5.0024251 Published Online: 02 November 2020(Scopus).

54. Khan, N.,Ahmad, G.N.,and Singh, N. K., 2020. Material Characterization of Resistance Spot Welded Aluminum Alloy 5052 and Stainless Steel 316L Joints. AIP Conference Proceedings 2273, 030003 https://doi.org/10.1063/5.0024249 Published Online: 02 November 2020(Scopus)

55. Kumar, D, Bishwakarma, H, Kumar, M, Singh, NK and Bajpai, V.2021 "Tip Induced Growth of Zinc Oxide Nanoflakesthrough Electro-chemical Discharge Deposition Process and Their Optical Characterization." *Proceedings of the ASME 2020 15th International Manufacturing Science and Engineering Conference. Volume 2: Manufacturing Processes;Manufacturing Systems; Nano/Micro/Meso Manufacturing; Quality and Reliability*. Virtual, Online. September 3, 2020. V002T08A008. ASME. https://doi.org/10.1115/MSEC2020-8283(Scopus).

56. Tiwari, V. and Singh, N. K.,2021.Assessment of Quality of Cloths Processed in Two Industries by Statistical Methods International Journal of Applied Engineering Research, 16(9), pp772-777, https://dx.doi.org/10.37622/IJAER/16.9.2021.772-777(Scopus)

57. Kumar, A., Kumar, D., Singh, N.K. (2022). Fabricating Micro-Holes Through Micro-EDM Process and Their Circularity Testing.Recent Trends in Product Design and Intelligent Manufacturing Systems, Lecture Notes in Mechanical Engineering. pp. 731–737, Springer, Singapore. https://doi.org/10.1007/978-981-19-4606-6_67(Scopus).

58. Parida, A.K., Sahoo, R., Singh, N.K., Bajpai, V. (2024). Investigation of Machining Characteristics Using Different Types of Plant-Based Bio-dielectrics in Maglev EDM. Recent Advances in Industrial Machines and Mechanisms. IPROMM 2022.pp 287–295. Lecture Notes in Mechanical Engineering. Springer, Singapore. https://doi.org/10.1007/978-981-99-4270-1_29.

59. Swain, D., Sahoo, R., Singh, N.K., Bajpai, V. (2024). Effect of Polarity Variation in Maglev EDM Using Nitrogen-Rich Powder-Mixed Dielectric. Recent Advances in Industrial Machines and Mechanisms. IPROMM 2022.pp 257–266 Lecture Notes in Mechanical Engineering. Springer, Singapore. https://doi.org/10.1007/978-981-99-4270-1_26

(iii)Book Chapter in Scopus Database

60. Ghosh, A., Chattopadhyaya, S., and Singh, N.K., (2012). Assessment of heat affected zone of submerged arc welding process through digital image processing. In: Delgado J., de Lima A., da Silva M. (eds) *Numerical Analysis of Heat and Mass Transfer in Porous Media, Advanced Structured Materials,*27. Springer, Berlin, Heidelberg DOI: https://doi.org/10.1007/978-3-642-30532-0_8(Scopus)

(iv) Research publications in Journal of IEEEXPLORE database

61. Sriram, M. V. V. N., Singh, N. K., and Rajaraman, G., 2010. Neuro fuzzy modelling of oxygen furnace and its comparison with neural network and GRNN Models. *Proceedings of 2010 IEEE International Conference on Computational Intelligence and Computing Research*, pp.1-8, Coimbatore India. DOI: 10.1109/ICCIC.2010.5705830

(iv) Research Publications in other National and International journals

62. Mukherjee, S.P. and Singh, N.K., 1993. A process capability index for two correlated quality characteristics.*IAPQR Transactions,*18(2), pp. 49-55. Kolkata, India, (Important International Journal).

63. Sandhu, D.S. and Singh, N.K., 1994. Quality related culture-understandable by a common man.*DGQA (Min. of Defence) Journal,*23(2), pp.17-21 New Delhi, India.

64. Singh, N.K. 2010.Performance improvement in supply chain using statistical/management techniques. *Journal of IMS Group,*7(1), pp.76-81 Ghaziabad UP India January- June,2010 (This Journal is listed in Cabell's Management Directory USA).

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100. Mishra, S., Kumar, A., Kumar, S., and Singh, N. K., 2017. Characterization of micro structure and mechanical properties of Inconel 625 sheet of Nd: YAG laser welding. *Proceedings of 4thInternational Conference on latest trends in Enginnering, Science Humanities and Management,* ISBN 978-93-86171-37-5.

101. Deepak Kumar, Nirmal Kumar Singh, VivekBajpai.2019, Synthesis and Characterization of Zinc Oxide Nano Flakes through Electrochemical Discharge Deposition and Growth Method. *Proceedings of International Conference on Precision, Meso, Micro and Nano Engineering* (COPEN 2019), IIT Indore.

102. Rajesh Sahoo, Deepak Kumar N K Singh and VivekBajpai(2021). Fabrication of micro-hole using Maglev EDM. *Proceedings of World Congress Micro and Nano Manufacturing 2020*.(Organised by IIT Mumbai).

103. Deepak Kumar N K Singh and VivekBajpai(2021). Fabrication of microcylinder using a tubular electrode in magnetic levitation based µ-EDM, *Proceedings of World Congress Micro and Nano Manufacturing 2021*. (Organisedby IIT Mumbai).

104. Rajesh, Sahoo, Nirmal Kumar Singh, Vivek Bajpai.2023. Feasibility assessment of novel Maglev dry-EDM by machining aerospace Al-6062 alloy, Proceedings of WCMNM, RP23-0017 pp. 110-114 doi:10.3850/978-981-18-5180-3_RP23-0017.

105. Anand Kumar, VivekBajpai and Nirmal Kumar Singh (2024). Quality Assessment of fabricated micro-holes on micro-sliced Ti-6Al-4V alloy sheet using Maglev EDM. accepted for publication in the Proceedings of 9th International and 30th All India Manufacturing Technology, Design and Research (AIMTDR-23) (CA)

106. **Book published**

N K Singh (2012): *Process Capability Analysis* Lambert Academic Publishing (LAP) Publishers Saarbrucken Germany. https://www.amazon.com/Process-capability-analysis-Productivity-Reliability/dp/3659222828

Nos. of Ph.D. produced as Principal/Sole/Co-Guide

Sl. Nos.	Name of PhD scholar	Topic of PhD	Date of award	Level of guidance
1.	DrUmesh Kr Vates	Experimental investigation and optimization of surface roughness of die steels in WEDM process using ANN Technique	09.03.2015	Principal and internal Guide
2.	DrVidhika Tiwari	Development of process capability index and its applications	12.03.2018	Sole Guide
3.	Dr B N Tripathi	Investigation of surface integrity and optimization of process parameters of cylinder liner of IC engine by honing process using RSM technique	20.03.2018	Sole Guide
4.	DrHemant Kumar	Experimental Investigation of Activated Flux TIG Welding on Inconel 718 Superalloy	27.07.2020	Sole Guide
5.	DrPankaj Sharma	Analysis of weld joint of weldable magnesium alloy (AZ31B) using metal inert gas welding (MIG)	21.06.2021	Co-Guide
6.	DrNirmalKrMandal	Modeling and optimization in high speed eco-friendly CNC turning: cutting tool micro-geometry and its effect on machining performance.	25.01.2022	Principal and internal Guide
7.	Dr. Gulshad Nawaz Ahmad	Experimental Investigation on Similar and Dissimilar Joining of Inconel 625 and DSS 2205 by Fibre Laser Welding.	05.09.2022	Sole Guide
8.	Dr. Deepak Kumar	Technology development for high precision micro/nano EDM.	30.01.2023	Co-guide
9.	Rajesh Sahoo	Approach from Micro to Nano domain machining in EDM	01.08.2019 (Date of regn.). Thesis submitted on 19.08.2024	Principal and internal Guide

Nos. of PhD scholars under guidance and supervision at present

Sl. No.	Name of PhD scholar	Topic of PhD	Guidance since	Level of guidance
1.	Hemlata Jangid	Investigation of Friction Surface Coating On Medium Carbon Steel for Mining Equipment	11.08.2021	Sole Guide
2.	Rashmi Priya Parida	Approaches to enable Laser bed fusion process affordable and sustainable.	12.08.2021	Principal and internal Guide
3.	Anand Kumar (Full-time converted to Part-time)	Maglev-EDM	03.08.2022	Principal and internal Guide
4.	Pawan Prakash	Manufacturing/welding	18.07.2023	Principal and internal Guide

Ph. D. thesis examined and vova-voce conducted: 02

(i) "Implementation of Maintenance Scheduling for Vehicles based on Geographical Information System" by Ms. Sushma S Kamlu Assistant Professor Department of Electrical and Electronics Engineering BIT Mesra Ranchi on 21.10.2019(viva-voce).

(ii) " Experimental Investigation and Process optimization of Nickel based Superalloys in Die-Sinking EDm using Taguchi Approach"by Mr Sahil Sharma Research Scholar Department of Mechanical and Automation Engineering Amity School of Engineering and Technology Amity University Noida UP India on 29.04.2024(viva-voce)

Invited Talk/Expert talk/Special lecture

(i) Delivered Expert Talk on 'Quality Engineering' on 09.09.2023 at Jharkhand Government Tool Room Ranchi.

(ii) Organised Invited/Encouragement Talk on topic "Latest Innovation in Railway Technology: Examples of Vande Bharat and New Locomotives" byEr. Debi Prasad Dash GM Industrial visit to Chittaranjan Locomotive Works Chittaranjan WB on 14.10.2023 From 6:00 pm to 7:45 pm in NAC Auditorium IIT(ISM) Dhanbad through Udaan Career Club at the institute level.

Industrial visit

(i) Organised industrial visit of faculty members i.e. Prof Pradeep Kr. Sadhu Professor(HAG), Prof DebjaniMitra Professor and Prof N K Singh Professor of the Departments of Electrical, Electronics and Mechanical Enggrespectively to Chittaranjan Locomotive Works Chittaranjan WB on 18.10.2023 for exploring the possibility of collaboration in terms of consultancy and/or R & D projects or solving technical problems related to the manufacture of parts of railway engines of Indian Railways. There was detailed discussion with Er. Debi Prasad Dash GM, Principal Chief Engineers/ Chief Engineers(Electrical, Mechanical and Design, Production etc. and 3 year

M. Tech program.

(ii) Orgainised industrial visit of faculty members i.e. SomnathChattopadhyaya Professor and Prof N K Singh Professor of the Department of Mechanical Engg respectively in DSTPS Andal and MTPS Mejia WB both under DVC for exploring the possibility of admission of Engineers in three year M Tech programme of IIT(ISM) Dhanbad.

(iii) Visit to NPTI, NHPC and Delhi Metrorail Academy New Delhi and Power Grid Gurugram on 12/13.12.2023 for 3 yearM Tech publicity.

(iv) Industrial visit of 2nd year students of MechEngg on 16.03.2024 to DSTPS Andal DurgapurW.B.

Lab Development: Developed Metrology Lab of the Department of Mechanical Engineering.

Program Coordinator: 3 year M Tech Programme in Mechanical Engineering at IIIF Kolkata and III New Delhi.

Coordinator : Executive Masters Programs i.e Executive M Tech(AI&DS), Executive M Tech(Reservoir Engg), Executive MBA(BA), Executive MBA, 3 year M Tech(Electrical.Engg) and 3 year M Tech(Mechanical .Engg) of five departments from 12.04.2024 to 27.07.2024.

YouTube Videos:

(i) My YouTube Video of Short lecture on 'Quality Engineering and Management of products and services' uploaded on 06.04.2023 and it is available at @ProfNirmalKumarSingh or https://www.youtube.com/watch?v=CXk3eK1OnDE

(ii) My YouTube Video of Know Your Prof | Episode 2 | LiveTalksISMhttps://www.youtube.com/watch?v=IceTXGXYn2Y #Podcast#Innovationfascinating journey of Prof Nirmal Kumar Singh

Patent granted: **A variable diameter e-shaped rail-clip fastened on rail for uniform stress distribution**.
The patent **has been published vide** the Patent Office Journal No. 06/2023 dated 10.02.2023 and application No.202331003165 dated 16.01.2023(Simulation patent).Inventors: Prof VivekBajpai, RajeshSahu (PhD scholar) and Prof Nirmal Kumar Singh and **Granted** vide Patent No. 543584 dated 28.06.2024 and Serial No. 033136382

R & D Project Proposals submitted

Sl. Nos.	Project Title	Funding agency	Date of submission	Amount	Role
1.	Development of Nano- Electric Discharge Machine (Nano-EDM)	SERB HRHR(Rejected in preliminary scrutiny)	24.07.2018	~ 118 lakhs	PI
2.	Design and development of Nano-Electric Discharge Machine (Not recommended in 2nd stage)	SERB CRG (Not recommended)	10.06.2019	~ 80 lakhs	PI
3.	Determination of relationships between gross calorific values and proximate components with the relative density of coal on seam-by-seam basis for Jharia coalfield and development of nomograms	CIL(CMPDIL) (Not recommended)	26.05.2020	~210 lakhs	PI
4.	Optimization of flux activated gas tungsten arc welding parameters for stainless steel AISI 304L to achieve maximum weld depth to width ratio and improved mechanical properties	ISRO (Respond) (Not recommended)	04.03.2021	~50 Lakhs	PI
5.	Multi-scale simulation of weld solidification cracking in Ni-based super alloys used in aerospace applications	ISRO(Respond (Not recommended)	04.03.2021	~50 Lakhs	Co-PI
6.	Design and development of customized external magnetic field setup for precise TIG welding process	SERBCRG (Not recommended)	07.03.2021	~30 lakhs	PI
7.	Selection and application of alloying elements and oxide fluxes in optimum combinations in Activated-TIG welding of AZ31B with CRC steel plates for the generation of IMC layers in single pass for improvement in microstructure and mechanical properties.	SERB SUPRA (Rejected)	11.05.2021	~33.5 lakhs	PI
8.	Selection and application of advanced materials based interlayers in optimum combinations for friction Stir welding of AZ31B with CRC steel plates for the enhancement of microstructural and mechanical properties.	SERB SUPRA (Not recommended)	11.05.2021	~72.5 lakhs	Co-PI
9.	Design and development of EMF assisted resistance spot welding (EMF-RSW) process of AZ31B and CRC steel sheets with feasible IMC layer incorporating metallic additives for the enhanced microstructural and mechanical properties	SERB CRG (Not recommended)	26.03.2022	24.97 Lakhs	PI
10.	Selection and application of filler materials and oxide fluxes in optimum combinations in Activated-TIG welding of AZ31B plates with CRC steel plates for the generation of favourable IMC layers in single pass for the improvement in microstructure and mechanical properties.	SERB CRG (Not recommended)	09.04.2022	19.992 Lakhs	Co-PI
11.	Investigation of relationships between GCVs and specific gravities with ultimate/proximate components of coal and development of nomograms.	Ministry of Coal S&T(CMPDIL Ranchi (Under consideration)	20.05.2022	49.007 lakhs	PI

12.	Measurement of machining and surface characteristics of Titanium superalloy using Die-sinking EDM through signal processing	DST Vritika/Abhyaas (Research Internship) Not recommended	23.06.2022	1.5 lakhs	Event Organiser
13.	Fabrication of micro holes on stainless steel sheet using Maglev Micro-EDM and their characterisation	DST Vritika/Abhyaas (Research Internship) Not recommended	27.06.2022	1.5 lakhs	Event Organiser
14.	Development of nano electric discharge machine (Nano-EDM)	CSIR New Delhi (Revised proposal)	18.08.2022	37.23 lakhs	PI
15.	Preventive Maintenance & Reliability of Equipment based on Performance Data.	Defence	27.03.2023	12.39 lakhs	PI
16.	Water jet machining for dismantling of ammunitions	Defence	18.04.2023	75 lakhs	Co-PI
17.	National Workshop on 'Quality Engineering and Metrology'	SERB SSY (Not recommended)	21.06.2023	2.5 lakhs	Convener
18.	Retrofitting of worn-out picks of drills, road headers and shearers for economic viability and enhanced efficiency	Ministry of Coal S&T(CMPDIL)Ranchi	24.07.2024 after revision	22.03 lakhs	PI
19.	5 Days Offline Executive Development Programon 'Quality Engineering and Management' at IIT(ISM)-Industry Institute Interaction Facility, 4th floor, NBCC Centre, Okhla Phase-I, New Delhi -110020.	Non sponsored (10Nos.of participants (Scientists/Officers from DRDO/DGQA (Ministry of Defence)	Conducted during 17-21 Sept., 2024	1.85 lakhs	Convener

Involvement in Consultancy/ R &D projects completed/ongoing

(i) R& D Project on "Design and Development of self-advancing (mobile) goafedgesupports(SAGES I & II)of Medium Duty: 2x200t Load Capacityfor depillaring operations in underground coal mines"(06 Nos.) costing Rs. 2.71crores(approx.) has been completed under Prof U K Singh(PI) and Prof Dheeraj Kumar(Co-PI) of the Department of Mining Engineering, Indian Institute of Technology(Indian School of Mines) Dhanbad India(**A member of the Technical Expert committee**).

(ii) R& D Project on "Development and Field Trial of 500 T Capacity SAGES- III for Use with Continuous Miners (Phase III)" (04 Nos.) costing Rs. 3.97 crores (approx.) has been undergoing under Prof U K Singh (PI) and Prof Dheeraj Kumar (Co-PI) of the Department of Mining Engineering Indian Institute of Technology(Indian School of Mines) Dhanbad India(**A member of the Technical Expert committee).**

Brief description of innovation and product development

(i) I was involved as a member of the Technical Expert Committee in completed R& D Project on "Design and Development of selfadvancing (mobile) goaf edge supports (SAGES)(Phases I& II)(06 Nos.) of Medium Duty: 2x200Tonnes Load Capacity for depillaring operations in underground coal mines" costing Rs. 2.71 crores (approx.) sanctioned by M/s Coal India Limited (Ministry of Coal)under Prof U K Singh as PI and Prof Dheeraj Kumar as Co-PI under the Department of Mining Engineering, Indian Institute of Technology (Indian School of Mines) Dhanbad India. Self-advancing (mobile) goaf edge supports (products) are being used in mines presently. (patent published)

(ii) I am involved as member of the Technical Expert Committee in on-going R& D Project on "Development and Field Trial of 500 T Capacity Sages- III for use with Continuous Miners (Phase III)" costing Rs. 3.97crores (approx.) sanctioned by M/s Coal India Limited (Ministry of Coal) under Prof U K Singh as PI and Prof Dheeraj Kumar as Co-PI under the Department of Mining Engineering, Indian Institute of Technology(Indian School of Mines) Dhanbad India.(under development)

Interaction with other research groups: Within the Institute / Outside the Institute:

The following project proposals have been submitted after discussion with the faculty members of sister departments:

(i) Design and development of EMF assisted resistance spot welding (EMF-RSW) process of AZ31B and CRC steel sheets with feasible IMC layer incorporating metallic additives for the enhanced microstructural and mechanical properties.(**Prof M R Rahul Assistant Professor/FMME)**

(ii)Selection and application of filler materials and oxide fluxes in optimum combinations in Activated-TIG welding of AZ31B plates with CRC steel plates for the generation of favourable IMC layers in single pass for the improvement in microstructure and mechanical properties.

(Prof M R Rahul Assistant Professor/FMME)

(iii)Investigation of relationships between GCVs and specific gravities with ultimate/proximate components of coal and development of nomograms**.(Prof Shravan Kumar Associate Professor/FMME)**

(iv) Retrofitting of worn-out picks of drills, road headers and shearers for economic viability and enhanced efficiency.**(Prof B S Choudhary Associate Professor/MininingEnggandProf M R Rahul Assistant Professor/FMME)**

Nos. of M.Tech. thesis supervised:

Sl No.	Name & Admission No.	Topics	Date
1.	Lalit Narayan Mahto2012MT0196(Mfg)	Some investigation of the yield parameters of the TIG welding process	May 2014
2.	SiddharthTamang 2012MT0186(Mfg)	Prediction of output parameters of submerged ARC welding by response surface methodology	May 2014
3.	SuganAbhishekMundu 2012MT0272(Mfg)	Analysis of yield parameters by varying input parameters of submerged ARC welding mild steel plates	May 2014

4	NauruBhangi 2013MT0123(MET)	Analysis of wear particles of used grease of tapered roller bearing of truck(rear wheel) using analytical ferrograph	May 2015
5	AhsanulHoda 2013MT0250(MET)	Analysis of wear particle of used lubricating oil of rear dump truck using analytical ferrograph	May 2015
6	Gautam Kumar2013MT 0157& Santosh Kumar 2013MT0173 (MET)	Electroless Ni-P coating on mild steel substrate	May 2015
7	Anshu Kumar Jha 2013MT0091& NiteshKumar2013MT0222(MET)	Electroless coating of mild steel substrate by nickel phosphorus-tungsten	May 2015
8	MilliSuchitaKujur 2013MT0335(Mfg)	Production of nanoparticles through electrochemical spark machining method	May 2015
9	Deepak Suna 2013MT0355(Mfg)	Parameter optimization of micro-ECM process using teaching learning based optimization algorithm	May 2015
10	Vikash Kumar 2013MT0095(Mfg)	Fibre laser welding of thin nickel sheet in air and water medium	May 2015
11	Prabhakar Umar Jha 2013MT0298(Mfg)	A study on surface coating processes on different base metals and its qualification through testing	May 2015
12	Ashish Kumar 2013MT0323(Mfg)	Rupture failure analysis and mechanical strength of wire electrode in wire EDM	May 2015
13	Gulshad Nawaz Ahmad 2013MT 0042(Mfg)	Joining of Ti-6AI-4V alloy sheets using fiber laser	May 2015
14	Mohammad ShahidRaza 2013MT0048(Mfg)	Fiber laser cladding of tungsten disulphide on 304 stainless steel surface	May 2015
15	Shiv Kumar 14MT 000583(MET)	Wear-debris detection and analysis techniques for lubricant-based condition monitoring	May 2016
16	AnuragJha 14MT000469(MET)	Failures of transformers in power system using the poisson distribution	May 2016
17	DivyaKushwaha 14MT000520(Mfg)	Experimental investigation of fabrication of micro tool by micro-electrochemical discharge machining process	May 2016
18	Ajit Kumar 14MT000409(Mfg)	Experimental investigation of tensile properties using miniature samples and implementation for laser additive manufactured AISI 304L material	May 2016
19	Amit Saini 14MT000404(Mfg)	Effects of build orientation and heat treatment parameters on microstructure and mechanical properties of Ti-6AI-4V alloy	May 2016
20	Ravi Ranjan Kumar 14 MT000549(Mfg)	Review of electrochemical machining on grey cast iron	May 2016
21	Pramod Kumar Mahato 14 MT000135(Mfg)	Fabrication of cylindrical micro tools by u ECM process and analysis of the cylindrical length	May 2016
22	Mohan Kumar 14MT000132(Mfg)	Experimental analysis of fabrication of microtool by electrochemical micromachining	May 2016
23	Mritunjay Kumar Tiwari 2014T0157(MET)	Analysis of root flange wear in wheel profile of 1676mm gauge locomotive wheels of Indian Railways	May 2016
24	Sudish Mishra 15MT000043(Mfg)	Characterization of microstructure and mechanical properties of inconel 625 sheet of Nd: Yag laser welding	May2017
25	AyushChaturvedi 15 MT000038(Mfg)	Effect of MQL on tool wear and surface roughness in turning operation	May2017
26	SonalAnand 15MT000004(Mfg)	Study of cutting temperature in turning operation under different machining environments	May2017
27	Parinay Gupta 15 MT 000039(Mfg)	Modelling of surface roughness and tool wear in turning operation	May2017
28	Mahendra Kumar Patel 15MT 000475(Mfg)	Effect of micro textured tool on machining through FE modeling	May 2017
29	Mayank Sharma 15MT000098(MET)	Effect of dry and near dry machining tool wear and chip formation mechanism	May 2017
30	Amit Gaurav 15MT000084(MET)	Finite element analysis effect of textured cutting tool on machining of ti-6AI-4V alloy	May 2017
31	Divit Saini 16MT000990(Mfg)	Analytical study of tribological performance of electroless coating of ni base with Al $_2O_3$ and WS_2 particles on SS304	May 2018
32	Alok Pandey 16MT000755(MET)	Investigation of powder mixed edm process parameters for machining nimonic 263 alloy using response surface methodology	May 2018
33	Rahul Sharma 16MT001472(MET)	Effect of activating fluxes on weld bead morphology of 304 stainless steel by flux assisted TIG welding process	May 2018
34	Deepak Taye 16MT001179(Mfg)	Electroless nickel phosphorus plating on aluminium substrate with and without nano particles suspension	2016-18
35	MdMeraj Uddin 16MT001483(MET)	Challenges associated with oil base drilling mud	May2018
36	Kumar Harsh Vardhan 16MT001275(MET)	Gas metal arc welding an optimization of parameters	May2018
37	Saurav Kumar Verma 16MT001477(MET)	To study the failure analysis of drilling Rig: Sagarkiran	May2018
38	AnuragNishitKindo 16 MT 000841(Mfg)	Friction stir welding of AA6061-T6and AA2024-T3 and study of surface morphologies defects and temperature variation	May2018
39	Vinay Kumar	Comparative study of power mixed EDM and Conventional EDM Using Response	May2018

	16MT000821(Mfg)	Surface Methodology	
40	Sanjay Kumar 16MT001484(MET)	Investigation of machining of inconel 825 by using powder mixed electrical discharge	May2018
41	Divya Prakash 16MT001379(MET)	Experimental investigation of MRR and surface roughness in wire EDM turning.	May2018
42	Kalyan Kumar Sarkar 16KT000125(Part-time)	Familiarization of water treatment technology and finding optimal strength of coagulant dosing by jar test for finding Alum consumption rate for cost benefit analysis and maintenance of management of water treatment system in IISCO Steel Plant Burnpur	May2019
43	Chiranjeevee Sinha 17MT002086(MET)	Impact of preheated biodiesel and fuel additives on performance of C I engine.	May2019
44	Prasenjit Sharma 17MT002262(Mfg)	Optical characterization of copper doped lead oxide nano-particle generated through ECDM process	May2019
45	Rakesh Kumar 17MT001532(Mfg)	Effects of welding parameters on microstructure and mechanical properties of two dissimilar Aluminum alloys 6063 and stainless steel welded joint by resistance spot welding.	May2019
46	Abhishek Kumar 17MT001709(Mfg)	Mechanical properties and microstructural investigation of resistance spot welding of 7075 Al Alloy	May2019
47	EarickLakra 17MT001507(Mfg)	Experimental study of minimization of burr height using cryogenic treatment	May2019
48	Raj Ranjan Ravi 17MT001510(Mfg)	Mechanical properties and microstructural investigation of resistance spot welding of AA 5052 and AA 6061	May2019
49	Dheeraj Kumar 17MT001791(MET)	Effect of MoS_2 powder mixed into dielectric fluid on electric discharge machining of Titanium alloy	May2019
50	Vishal Kr Verma 17MT002118(MET)	Mechanical properties and microstructure of 7075 Al Alloy by TIG welding	May2019
51	NrupaKeshariRana 17MT001512(MET)	Effect of Dielectric with and without powder in electric discharge machining of Inconel 825	May2019
52	Bobby Karmali 17MT002010(MET)	Material characterization of Al alloy and stainless steel after riveting of stainless steel in Al sheet under resistance spot welding	May2019
53	Nausher Khan 17MT002086(MET)	Material characterization of resistance spot welded Al alloy 5052 and stainless steel 316L joints	May2019
54	Gautam Kumar(Mfg) 18MT0238	Studies on the metallurgical and mechanical properties and corrosion behaviour of inconel 625and duplex 32750 dissimilar joints by TIG welding	May2020
55	Nikhil Agrawal(Mfg) 18MT0474	Laser beam welding of super duplex stainless steel-2507 sheets	May2020
56	Abhishek Kumar Sinha (Mfg) 18MT0139	Laser beam welding of nickel based super alloy INCONEL 625	May2020
57	AlokNathJha 17KT000267(Mfg)(3y MTech)	Analysis of aluminum alloy/ ZrSiO4 surface composite via friction stir process	May2020
58	Narendra Kr Sharma 17KT000264(Mfg)(3yMTech)	Enhancing the mechanical properties and wear Resistance of HSS Tool by the coating of TaC	May2020
59	Sunil Kr Prajapati 17KT000173(Mfg)(3y MTech)	Improvement of the process capability of milling machine by the application of statistical techniques	May2020
60	Rajnish Kr Pandey 18MT0080 (MET)	Effect of Copper Oxide nano-cutting fluid on burr formation of INCONEL-718 during micro-milling operation	May2020
61	Akhilesh Kr Chaudhary 18MT0404(MET)	Predictive maintenance of ball bearing using vibration signal	May2020
62	Mohar Kumar(MET) 18MT0401	Analysis of glass/basalt fibre composite	May2020
63	SagarAgrahari(MET) 18MT0206	Reliability analysis of water based centrifugal casting machine	May2020
64	Anupam Prakash(MET) 18MT0382	Synthesis of ZnOnano-flakes through micro EDM deposition method and itsapplication as gas sensor	May2020
65	Rahul Kumar(MET) 18MT0033		May2020
66	Ashok Kumar(MET) 18MT0258	Fabrication MWCNT imbedded woven carbon fiber composite and its mechanical characterization	May2020
67	Pankaj Kumar(MET) 18MT0564	A Study to Coat AA1100, AA6061 and SS304 layer on Mild Steel plate by Friction Surfacing	May2020
68	Shashi Shankar 19MT0365(MET)	A review on fault analysis techniques in rolling element bearings	May,2021
69	HemlataJangid 19MT0156 (Mfg)	Study of dissimilar friction stir welding using Al-steel plate	May,2021
70	Jaya Kori 19 MT0167(Mfg)	Effect of oxide fluxes on Active Flux Tungsten Inert Gas Welding	May,2021
71	Abhinav Kumar 20MT 0007(Mfg)	Fabricating micro-holes through micro-EDM process and their circularity testing	May,2022
72	Diptiranjan Swain21MT0139	Analysis of output responses in maglev EDM using powder mixed dielectrics	May,2023
73	Amit Kumar Parida 21MT0047	Investigation of machining characteristics using different plant-based bio-dielectrics in maglev EDM	May,2023
74	Bidyabhushan Singh 22MT0094	Study on corrosion behavior of ER70S-6 steel processed by Wire Arc Additive Manufacturing (WAAM) after heat treatment processes.	May,24
75	Rishabh Rajput 22MT0299	Effect of scanning strategy on residual stresses in selective laser melting	May,24

Supervision of Dissertation/Project Work/PhD

(i) Supervising 04 Nos. of full time PhD scholars of Department of Mechanical Engineering Indian Institute of Technology(Indian School of Mines), Dhanbad, India.

(ii) Supervised Project Works of more than 150 Nos. till date /Supervising Project Works of 07Nos. respectively of UG/PG students of the Department of Mechanical Engineering Indian Institute of Technology (Indian School of Mines), Dhanbad, India every year.

(iii) Supervised a dissertation on "Quality-potent tool for survival/growth/profitability of Indian Manufacturing Industry" for student of Post Graduate Diploma in Management from AIMA-CME, New Delhi in 1995.

Review of the research papers of Journal

Reviewed many journal papers in last three years.

Seminar/Symposium/Conference activities

1) Presented a research paper on Process Capability Analysis in the National Conference on Quality in the Global Economic Context held in Kolkata during 23-24 December, 1993 organized by IAPQR, Kolkata, India.
2) Presented a paper on Statistical method for comparative assessment of quality of cloth plain weave polyester and cotton khaki or light blue grey processed by two industries in the National Conference on Science and Technology-Interface with Productivity, Quality and Reliability held in Kolkata during 9-11 November 1995 organized by IAPQR, Kolkata, India.
3) Presented a paper on "Application of Process Capability Analysis in the Manufacturing Industry" in the nth National Convention of Mechanical Engineers on 6-8 November,1997 at the Institution of Engineers (India), Delhi State Center, New Delhi, India.
4) Presented a paperon"Application of process capability measures in the textile industry"in the National Seminar on Statistical Computing organized by the Department of Statistics and Computer Applications T.M. Bhagalpur University, Bhagalpur, India during 26-28 November, 2002.
5) Presented a research paper on "Process capability index for bivariate exponential distributed quality (reliability) characteristics and its sampling properties" in the International Symposium on Emerging Strategies for Improving Productivity, Quality and Reliability held during 12-14 December, 2003 at Kolkata, India organized by IAPQR.
6) Acted as session coordinator in National Conference held in January 2007 (Food Safety & Security) in Kolkata, India.
7) Presented a paper on"Smart machineries and processes for crushing, screening and conveying of various materials in mines" in the National Seminar on Crushing, Screening and Conveying held at Indian School of Mines, Dhanbad, India during 11-12 Sept. 2008 organized by the DepartmentofME&MME,Indian School ofMinesDhanbad India.
8) Presented a paper in National Seminar on Drills & Drilling – an Update2010(D&DU-2010) in the Indian School of Mines, Dhanbad, India+ during 23-24 Sept. 2010 organized by the Department of ME&MME, Indian School of Mines Dhanbad India.
9) Presented a paper on"Neuro Fuzzy Modelling of Oxygen furnace and its comparison with Neural Network and GRNN Models" in the2010 IEEE International Conference on Computational Intelligence and Computing Research(ICCIC) Tamil Nadu College of Engineering Coimbatore(Tamil Nadu) India during 28-29 December, 2010 and acted as session Chair of three sessions.
10) Presented a paper on "Different types of Jugaad for the fabrication of various furniture / items in the workshop" in the National Conference on Jugaad in Manufacturing"(NCJM-2010) IT BHU Varanasi India during 8-9 January,2011.
11) Presented (i)Oral paper on "Assessment of Heat Affected Zone of Submerged Arc Welding Process through Digital Image Processing" (ii) Poster paper on "Prediction of Weld Bead Parameters, Transient Temperature Distribution and HAZ(Heat Affected Zone) width of Submerged Arc Welded Structural Steel Plates" in the 7th International Conference on Diffusion in Solids and Liquids 2011(DSL-2011) held at the Hotel Hilton Vilamoura as Cascatas Golf Resort &Spa, Vilamoura (Algarve Province) Portugal during 26-30 June, 2011.
12) Presented paper on "3rd Degree Mathematical Model appropriate for Parametric Estimation of Submerged Arc Welding Process" in the International Conference on Advanced Engineering Materials and Technology 2011(AEMT- 2011) held at the Hotel Yuhai International Sea Resort Sanya (Hainan province) China during 29-30 July, 2011.
13) Presented paper on **"**Comparative Assessment of Quality of Cloths Processed in Two Industries by Statistical Methods" in the International Conference on Operations Research, Data Analytic and Decision Analysis(ICORDADA) 2013 held during 21-23 October,2013 organized by Department of Statistics University of Kashmir, Hazratbal,Srinagar India.
14) Presented paper on "Prediction and optimization of heat affected zone width of submerged arc welding process"in the 3$_{rd}$ International Conference and Exhibition on Material Science &Engineering (Material Science) 2014held during6-8 October 2014 at Hotel Hilton Airport San Antonio Texas USA.
15) Attended National conference on "Advances in thermal Engineering"(AITE-2014) during 19-20 December, 2014 organised by the Department of Mechanical Engineering , Indian Institute of Technology (ISM) Dhanbad India.
16) Attended a National Conference in CSIR-CGCRI Jadavpur Kolkata in 14-15 June,2015 organised by IAPQR Kolkata. (Personal basis).
17) Attended International Conference on "New Paradigm in Statistics for Scientific and Industrial Research" in CSIR-CGCRI Jadavpur Kolkata during04.01.2018 - 06.01.2018 jointly organised by IAPQR and CSIR-CGCRI Kolkata and acted as Session Coordinator in one Session on SQC and Reliability.
18) Presented a research paper on "Metal matrix nano composites using graphene nano platelets indented on copper particle in aluminum matrix" in Advanced Material World Congress(AMWC)-2018 organised by International Association of Advanced Materials & VBRI Press Sweden during 4-8 February 2018 in the Conference Centre, Mariner of the Seas, Singapore and **Co-Chaired a session on "Computational Composite & Ceramic Materials "with Prof. Jiuzhou Zhao(China) as a Chairman.**
19) Presented a research paper on **'**Process Capability Index for geometrically distributed quality characteristics' in International Conference on Computational Methods in Manufacturing (ICCMM-2019) organized by IIT Guwahati during 8-9 March,2019 at IIT Guwahati.
20) Presented paper on "Impact of machining condition on the cylindricity of micro-rods in micro-electrochemical turning process" in the 3$_{rd}$ World Congress on Micro and Nano manufacturing(WCMNM) 2019 held during 9-12 September 2019 at Hotel Sheraton Raleigh North Carolina USA.(along with Mr. Mohan Kumar JRF).

21) Presented a research paper on **'**Operational feasibility of Maglev EDM using powder mixed dielectric for machining Ti-grade 5 alloy' in **International Conference on Precision, Micro, Meso and Nano Engineering(COPEN-12)** organized by IIT Kanpur during 8-10, December,2022 at IIT Kanpur.
22) Coordinator of Tent Committee in International Conference on Industrial Problems in Machine and Mechanism (IPRoMM)-2022 held during22-23.December,2022 held in/organized by IIT(ISM) Dhanbad.
23) Presented a research paper on 'Developments in applications of process capability indices' IAPQR Golden Jubilee **International Conference on Productivity, Quality and Reliability: New Vistas (ICPQR-2023)** organized by IAPQR Kolkata during 7-8 January, 2023at Sister Nivedita University, New town Kolkata.
24) Presented a research paper on '**Quality Assessment of fabricated micro-holes on micro-sliced Ti-6Al-4V alloy sheet using Maglev EDM'**
25) **9th International and 30th All India Manufacturing Technology, Design and Research (AIMTDR-23)** organized by the Department of Mechanical Engg IIT(BHU) during 8-10 December, 2023 at IIT(BHU) Varanasi.
26) Spoke as **Guest of Honour** on 21.12.2024 in Valediction Function in 3rd International and 15th National Conference on "Industrial Problems on Machine and Mechanisms (IPRoMM) 2024 organized by Department of Mechanical Engineering, National Institute of Technology Jamshedpur India in collaboration with the Associations for Machine and Mechanisms (AMM), during December 19-21, 2024 at NIT Jamshedpur.

Achievements

- Fabrication of furniture of around Rs 5.00 crores of IIT(ISM) Dhanbad during January 2008 - June 2018 as Assistant/Associate Professor(Workshop) as sectional head of Central workshop(PIC) between 15.01.2008 and 31.07.2020
- Shifting of Longwallgallery,Longwall Mining Lab and Slurry Transportation Lab of Department of Mining Engg. of IIT(ISM) Dhanbad during September 2012-March 2014
- Shifting of Electro Probe Micro Analyser (costing around Rs. 11.00 crores) of CRF of IIT(ISM) from truck to laboratory in the Department of Petroleum Engg.
- **Excellent teaching feedback i.e.10 out of 10(General impression about teacher) for teaching Open Elective course on 'Quality Engineering and Management' during Monsoon Semester 2022-23. Commendation letter has been given by the Director IIT(ISM) Dhanbad DT/Feedback/MS22-23 dated 14.03.2023.**

Other responsibilities at present/past

- Member Departmental Purchase Advisory Committee
- Member Central Write-off Committee
- Chairman Departmental store verification committee
- Departmental Admin/Coordinator I-STEM Portal
- Chairman/Member Doctoral Scrutiny Committee
- Faculty advisor Udaan Career Club

Other works done in past

- Initiation of conservancy and cleaning service in DGQA(Ministry of Defence) residential complex Belur Howrah as Secretary Resident Welfare Association and as staff representative of organization.
- Officer-in Charge of 06 Sections at Advanced Training Institute (Govt. of India, Ministry of Labour, DG E&T), Dasnagar Howrah during the tenure as Assistant Director of Training (03.04.01-14.01.08). (Now NSTI under Ministry of SDE).
- Management and administration of Central Workshop of IIT(ISM) Dhanbad for handling of around 700 Nos. of UG/PG students/research scholars in every semester as Assistant/Associate Professor(Workshop) from 15.01.2008 to 31.08.2018.
- Management and execution for repair of furniture/fixture of IIT(ISM) costing around 5-10 lakhs rupees per year(around 50 lakhs in 10.5 years) as Assistant/Associate Professor(Workshop)(praised by the Director/Registrar).
- Renovation and improvement of Central Workshop of IIT(ISM) Dhanbad including establishment of various laboratories of the Department of Mechanical Engg.in new workshop building as Assistant/Associate Professor(Workshop).
- Supported/supporting faculty members (Manucturing Specialisation) of department of Mechanical Engg. for establishment of various laboratories in the Central Workshop as Assistant/Associate Professor(Workshop).
- Convener of Pratibimb, 2019
- Faculty Advisor Automotive Club from January,2008 to July, 2022.
- Faculty Advisor Udaan Career Club since July 2018

Areas of Specialization/Interests of Teaching

- Industrial System Engineering: Work-study, FMS or production system analysis and design, Engineering Economics and Management;Manufacturing Process, Project Management, Supply Chain Management, etc.
- Operations/Production Management : Production/Maintenance/Technology Management, Statistical Quality Control (SQC)/Statistical Process Control(SPC), Numerical Methods, Total Quality Management(TQM),ISO 9000 Family of Quality ManagementStandards, Management Methods, Quantitative Methods, Engineering Management,Six Sigma, Total Productive Maintenance(TPM), Engineering Innovation Management
- Manufacturing Process, Reliability, Availability, Maintainability and Safety(RAMS),Research Methodology and Statistics. Maintenance Engineering, Measurement and Control, Quality Engineering and Management

Training/Professional/Vocational Courses

- Attended a course on Entrepreneurship Development Programme during 9-11August, 1986 atRegional Institute of Technology(RIT) (now NIT), Jamshedpur India.
- Undergone vocational training in TISCO (Tubes Division), Jamshedpur during May 21 to June 14, 1986for study manufacture of various types of tubes/pipes.
- Attended a course on Inspection and Quality Control during 4-15 December,1995 at Foreman Training Institute, Jamshedpur.
- Attended a course on Six Sigma at Bengal Club, Kolkata, India, during 26-27April. 2002 organized by IAPQR.
- Attended a course on Introduction on progamme for officers during 15-26 July, 2002 at CSTARI (Central Staff Training & Research

institute), Kolkata,India.

- Attended a Product Awareness Program on CNC machines at HMT Machine Tools Ltd., Bangalore, India, during 24.07.2006-03.08.2006.
- Organised industrial visit of M Tech (Manufacturing) students to Bangalore International Exhibition Centre in 2013.

Award/Prizes/Medals won by students under my guidance

(i) All Terrain Vehicle was fabricated byUG students of Mechanical Engineering in the Central Workshop of the Indian School of Mines, Dhanbad, India under my guidance as **Faculty Advisor of Team MECHISMU** and won Runners up prize of 3 lakhs rupees and a Trophy in BAJA SAE INDIA ALL TERRAIN VEHICLE Competition 2010 held at NATRAX Pithampurnear Indore (MP) India during 29.01.2010-31.01.2010 organized by SAE INDIA.

(ii) Formula style race vehicle was fabricated in the Central Workshop of the Indian School of Mines, Dhanbad, India under my guidance as Faculty Advisor, participated in SUPRA SAE INDIA at MMST track in Chennai India held during 01.07.2011-03.07.2011 and won Winner's Prize of Rs.50000/- as well as a Trophy in Auto-Cross event.

(iii) Three teams of UG students of the Department of Mechanical Engineering of Indian School of Mines, Dhanbad manufactured three human powered bicycles/tricycles in the workshop under my supervision and participated in the Human Powered Vehicle Challenge (H.P.V.C.) held at IIT Delhi from 17th to 19th January, 2014. The event was organized by the American Society of Mechanical Engineers (ASME) for the first time in India. The task of the competition was to design a Human Powered Vehicle (H.P.V.). One out of three teams "Wheelism" won overall first prize with trophy with 2nd and 3rd position in the speed and endurance event respectively.

(iv) One team of 25 UG students of the Department of Mechanical Engineering designed and manufactured a Formula style race vehicle. '**Team MECHISMU'** participated in FORMULA DESIGN CHALLENGE 2015 held at Kari Motor Speedway, Coimbatore in January 2015 and secured an overall position of 6th among 50 teams.

(v) Two teams of UG students of the Department of Mechanical Engineering of Indian School of Mines, Dhanbad manufactured two solar powered cars(three wheeler) in the workshop under my supervision and participated in the Electric Solar Vehicle Challenge(E.S.V.C.) held at Radharaman College and RPM International Karting Circuit, Bhopal from 25th to 29th March, 2016. The event was organized by the Imperial Society of Innovative Engineers (ISIE) for the second time in India. The task of the competition was to design a Solar Powered Vehicle. A total of 75 teams participated in the competition. Out of the two teams, "Boosters" finishedoverall seventh and team "Excelsior" finished overall 21stin the competition.

(vi) One team of 30 students of Department of Mechanical Engineering participated in **Go Kart Design Challenge (G.K.D.C.),** held at Kari Motor Speedway, Coimbatore from **15 – 19 February 2016.** The event was organized by Indian Society of New Era Engineers (ISNEE). The task of the competition was to fabricate a Go Kart. A total of 97 teams participated in the competition. The team 'CBR'secured 37th position in the competition.

Visits abroad for presentation of research papers

1. Vilamoura& Lisbon (Portugal) andFrankfurt (Germany).
2. Kunming &Sanya (China).
3. San Antonio (Texas USA) andNew York (USA)
4. Singapore(Mariner of The Seas) and Penang(Malaysia)
5. Raleigh (Texas USA) and Chicago(USA)
6.

Membership of professional societies

1. Fellow of Institution of Engineers (India).
2. Life Member of Indian Association for Productivity, Quality and Reliability.
3. Life Member of Indian Science Congress Association.
4. Life Member of Operational Research Society of India.
5. Member of Indian Society for Advanced Materials and Process Engineering.
6. Life Member NIT Jamshedpur Alumni Association(NITJAA)
7. Member Board of Governors of Indian Association for Productivity, Quality and Reliability for 2023-25.

Family details

(i) Mrs Urmila Singh Wife – BA, LL B, Homemaker.

(ii) Dr.(Mrs.) Sujata Upgupta Daughter(married)-M Sc (Gold Medal /Env. Mgmt.)(2007), MTech (Remote Sensing & GIS)(2011) and PhD(Engg.)(Environmental Science)(2018){IIT(ISM) Dhanbad}. Presently she is owner of company for the supply of furniture in foreign countries.

(iii) Er.Prashant Kumar Son (Married) - B Tech (Mech. Engg., 2011) (NIT Patna) and working as Senior Manager(Operation & Maintenance) in National Thermal Power Corporation Unchahar (near Prayagraj / Rai Bareli) UP.

Languages Known	Read	Speak	Write
Bhojpuri	✓	✓	✓
Hindi	✓	✓	✓
English	✓	✓	✓
Sanskrit	✓	×	✓
Bengali	✓	✓	×

Hobbies/Interests

Teaching, reading Quality and Engineering related journals, watching TV, reading Newspapers, visiting new places and finding satisfaction in completing any work in time and excellently.

References

(i) **Prof (Retd.) Shyama Prasad Mukherjee** (for more details visit : https://en.wikipedia.org/wiki/Shyamaprasad_Mukherjee)
Former Centenary Professor of Statistics Presently Mentor of Indian Association for Productivity Quality & Reliability (IAPQR) Kolkata.
and Former Dean Faculty of Science Internationally renowned and legendary statistician and Quality Expert.
Calcutta University KolkataAwarded by The Prime Minister of India for Life time achievement in the field of statistics in 2012.
Email:prof.mukherjee@gmail.com Phone: +919831558126(M) / +91 3326580905(R)

(ii) **Prof G S Pathak**
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Department of Management Studies
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(iii) **Prof A K Nirala**
Professor(HAG)
Department of Physics
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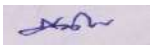
The above information is true to the best of my knowledge and belief. I may be held responsible if any information is found to be incorrect.



(Prof Nirmal Kumar Singh)
Professor
Department of Mechanical Engineering
Place : Indian Institute of Technology(Indian School of Mines)
Dhanbad-826004, Jharkhand, India
Dated: 08.01.2025