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Qualification	Visiting Post-Doctoral Fellow, University of Technology Sydney, Australia PhD, MTech, BE
Experience	20.5 Years
Patents Granted	1. Currency Sanitizing Machine, Design (National) 2. Sustainable Water Filtration System (International-Germany) 3. An Intelligent System for Advanced Farming (International-Germany) 4. IoT Based Perpetual baby cradle, Design Patent (National) 5. Infant Warmer, Design Patent (National)
Patents Published	1. [VN] Printing system that reuses print media. (International-Vietnam) 2. D-DUSTBIN: Digital Dustbin (National) 3. Fuel Indicator and Global Fuel Pump Detection System (National) 4. SMARTEND-OF-LIFE CARE: An App for Organ Donation (National) 5. I-Pen: Detect the printed text and spray the page color means remove the text (National) 6. RWDO- Machine, Rain Water Drain Out Machine from Pit or Basement (National) 7. Add Pen Drive WIFI (National) 8. Village-ATM: Multimodal Biometric System for one stop banking for rural India (National) 9. FAH-Food Truck: Fully Automated Human less food truck (National) 10. EVM-Control :Electric Vehicle Controlling System using Beagle bone Black REVC(4G) (National) 11. IEG-Power Bank: Integrated Electronics Gadget Power bank A (National) 12. IP-System: Intelligent Printing System to remove text on paper and reuse paper (National) 13. IVH- Sanitizer System: Intelligent Vehicle Hand Sanitizer System Using Pre-Instruction (National) 14. WVTI System: Worker Verification and Tracking Intelligent System (National)
Scholarly Publications| Journal	1. Popli, D., **Batra, U.,** Msomi, V., Verma, S., (2023), A systematic survey of RUM process parameter optimization and their influence on part characteristics of nickel 718, Nature's Scientific Reports, Impact Factor 5.516 **(SCI Indexed)** 2. Kataria, S., **Batra, U.** (2022), Co Clustering neighbourhood-based collaborative filtering framework using formal concept analysis, International Journal of Information Technology , 14(4), pp. 1725-1731. **(ESCI Indexed)**

3. Tiwari, A., **Batra, U.** (2021), Blockchain based Reparations in Smart Buildings-Cyber Physical System, Defence Science Journal, Volume 71, pp 491-498 **(SCIE Indexed)**

4. Verma, S., Msomi, V ., Mabuwa, S., Merdji, A., Mishra, J., **Batra, U.,** Sharma, S., (2021) Machine learning application for evaluating friction stir processing behavior of dissimilar aluminium alloys joint, (Sage) Journal of Materials: Design and Applications, ISSN 1464-4207, Volume 26, Impact Factor 2.311 **(SCIE Indexed)**

5. Verma, S., Garg, D ., Mishra, J., **Batra, U.,**(2021) Multi-objective optimum design for FS welded 7039 aluminium alloy considering weld quality issues, Materials Today Communications, ISSN 2352-4928, Volume 26, Impact Factor 3.383 pp 1-8 **(SCIE Indexed)**

6. Tiwari, A., **Batra, U**. (2021), Blockchain and Machine Learning for e-Healthcare Systems , IET Healthcare Technologies, Volume 29, pp 231-266 **(WoS/ESCI Indexed)**

7. Kumar, D., **Batra, U.,** (2020) Classification of Invasive Ductal Carcinoma from Histopathology Breast Cancer images using Stacked Generalized Ensemble, Journal of Intelligent and Fuzzy Systems. Volume 40, ISSN 1064-1246, pp 4919-4935 Impact Factor 1.851 **(SCIE Indexed**)

8. Verma, S., Mishra, J., Singh, J., **Batra, U.,** Kumar, Y., (2020) Prediction of tensile behavior of FS welded AA7039 using machine learning, Materials Today Communications. Impact Factor 2.678 **(SCIE Indexed)**

9. Sharma, N., **Batra, U.,** (2020) An Enhanced Huffman-PSO based Image Optimization Algorithm for Image Steganography, Genetic Programming and Evolvable Machines, Impact Factor 1.781 **(SCIE Indexed**)

10. Kumar, D., **Batra, U.** (2019). Epidemiology of Breast Cancer in Indian Women: Population and Hospital Based study, EAI Endorsed Transactions on Pervasive Health and Technology ISSN: 2032-9407, Volume 4,Issue 16, (**ESCI Indexed**)

11. Saluja, S., **Batra, U.,** (2019) Optimized approach for antipattern detection in service computing architecture, Journal of information and optimization sciences, Taylor and Francis, PP. 1069-1080, vol. 40, Issue 5 (**ESCI Indexed**).

12. Kumar, D., **Batra, U.** (2020). An ensemble algorithm for breast cancer histopathology image classification. Journal of Statistics and Management Systems, 23(7), 1187-1198 (**ESCI Indexed**).

13. Vyas, A., **Batra, U.,** (2019) Bot detection by monitoring and grouping domain name server record response queries in DNS traffic, Journal of information and optimization sciences, Taylor and Francis, PP. 1143-1153, vol. 40, Issue 5, (**ESCI Indexed**).

14. Sharma, N., **Batra, U.,** Zafar, S.(2018), Confine Ingenious Firefly Algorithm Correlating Water Drop Algorithm for Amassment in Networks, EAI Endorsed Transactions on Scalable Information Systems, doi: 10.4108/eai.13-7-2018.159625. **(ESCI Indexed)**

15. Sharma, N., **Batra, U.,** Zafar, S.,(2018) Catechize Global Optimization through Leading Edge Firefly Based Zone Routing

Protocol, Recent Patents on Computer Science (by Bentham). DOI: 10.2174/2213275912666181128121811.**(Scopus Indexed).**

16. Sharma, N., **Batra, U.,** Zafar, S.,(2018) Inculcating Global Optimization in ZRP through Newfangled Firefly Algorithm, International Journal of Computer Network and Information Security by MECS Press. DOI: 10.5815/ijcnis.2019.02.06 **(Scopus Indexed)**.

17. Sharma, N., **Batra, U.,** Zafar, S., FRA-ZRP Approach for Global Optimization in MANET, Accepted by International Journal of Information Technology, The manuscript number is BJIT-D-18-00536R2. **(Scopus Indexed)**.

18. Thapar, P., **Batra, U.** (2017), Implementation of Ant Colony Optimization in Routing Protocol for Internet of Things, Innovations in Computational Intelligence, Studies in Computational Intelligence, Springer Nature, PP. 151- 176, ISBN 978-981-10-4554-7. **(Scopus Indexed)**

19. Ahuja, H., Sujata, **Batra,U.** (2017), Performance Enhancement in Requirement Prioritization by Using Least-Squares-Based Random Genetic Algorithm, Innovations in Computational Intelligence, Studies in Computational Intelligence, Springer Nature, PP. 251-276, ISBN 978-981-10-4554-7 **(Scopus Indexed)**

20. Kumar, D., **Batra, U.** (2017). Clustering Algorithms for Gene Expression Data, International Journal of Recent Research Aspects IJRRA ISSN: 2349-7688, Volume 4,PP. 122-128 **(Scopus Indexed)**

21. **Batra, U.,** Sachdeva S., Mukherjee, S., (2015). Implementing Healthcare Interoperability Utilizing Service Oriented Architecture and Data Interchange Agent, Elsevier Journal of Health Policy and Technology (2015) 4, 241–255. **Impact Factor: 6** (**SSCI Indexed**) **(Scopus Indexed)**

22. **Batra, U.,** Mukherjee, S., Yadav A.(2014),Analytical comparison of Aspectized Service Oriented and Distributed Objects, Elsevier IERI Procedia7 71 – 76, doi: 10.1016/j.ieri.2014.08.012 ISSN: 2212-6678. (**Scopus Indexed**)

23. Nandal, A., **Batra, U.** (2014), HL7 Aware Medical Information Exchange. International Journal of Scientific and Engineering Research, Volume 5, Issue 3, ISSN 2229-5518 , pp. 313-317

24. Sharma, N., **Batra, U.,** Mukherjee, S. (2014) Enhancing Security in Service Oriented Architecture driven EAI using Aspect Oriented Programming in healthcare IT. International Journal of Scientific and Engineering Research. VOLUME 5, ISSUE 3, ISSN 2229-5518, pp.50-53 **(Scopus Indexed)**

25. **Batra, U.,** Mukherjee, S., Nandal, A., Sachdeva, S. (2014). Explorative Study of Healthcare Data Interchange Standards, Journal of Theoretical and Applied Information Technology, May 2014. Vol. 63 No.2, pp. 420-430 **(Scopus Indexed)**

26. **Batra, U.,** Mukherjee, S. , Sachdeva, S., Mehndiratta, P (2013). Aspect Oriented Programming for Modularization of Concerns for Improving Interoperability in Healthcare Application. Springer Verlag LNCS 7813, pp. 197-211, DNIS 2013 (Japan). **(Scopus Indexed)**

27. **Batra, U.**, Mukherjee, S (2011). National Healthcare Information System Integration: A service oriented approach INTERNATIONAL JOURNAL of COMPUTERS., 2011, issue 3, vol. 5, pp. 354-361. **(Scopus Indexed)**

28. Dahiya, D., **Batra, U.** (2009) Distributed Middleware Framework using Aspects. ACM SIGSOFT Software Engineering Notes (SEN), USA, Vol. 34, No. 4, July 2009, ISSN: 0163-5948 pp.1 – 6. **(Scopus Indexed)**

29. **Batra, U.**, Dahiya, D., Bhardwaj, S. (2008). Analytical Study of Object Components for Distributed and Ubiquitous Computing Environment. Paper published in the WSEAS Transactions on Information Science and Applications, Issue 6, Vol. 5 (ISSN 1790 - 0832), pp. 891 – 900, Greece . http://www.worldses.org/journals/information/information-2008.htm

Scholarly Publications| Book Chapters| Conferences

30. Bonkoungou, S.Roy,N.R.,Ako, N.H.A.-E., **Batra, U.** (2023), Proceedings of International Conference on Intelligent and Innovative Technologies in Computing, Electrical, and Electronics, ICIITCEE 2023, pp. 732-738 **(Scopus Indexed)**

31. Tiwari, A., **Batra, U.** (2023), Internet of Medical Things Enabled by Permissioned Blockchain on Distributed Storage, Lecture Notes in Electrical Engineering, 982, pp.3-17 **(Scopus Indexed)**

32. Thapar, P., **Batra, U.** (2022), Implementation of Elliptical Curve Cryptography Based Diffie-Hellman Key Exchange Mechanism in Contiki Operating System for Internet of Things, 10(2), pp. 335-340 **(Scopus Indexed)**

33. Verma, S., Msomi, V., Mabuwa, S., ...Batra, U., Sharma, S. (2022), Machine Learning application for evaluating the friction stir processing behavior of dissimilar aluminium alloys joint, proceedings of the Institution of Mechanical Engineers, Part L: Journal of Materials: Design and Applications, 236(3), pp. 633-646. (**Scopus Indexed**)

34. Tiwari, A., **Batra, U.**(2022), Medical Cyber-Physical Systems Enabled with Permissioned Blockchain, Communications in Computer and Information Science, Volume 1614, pp 76-87 **(Scopus Indexed)**

35. Tiwari, A., **Batra, U.** (2020), Blockchain Secured "Smart Buildings" as Cyber Physical Systems, Communications in Computer and Information Science, pp 35-53,Springer Verlag, https://doi.org/10.1007/978-981-15-5830-6_4. (**Scopus Indexed**)

36. Tiwari, A., Batra, U., Coalition of IoT and Blockchain: Rewards and Challenges, IEEE International Conference on Computing for Sustainable Global Development (13-15 March 2019), ISBN: 978-1-5386-9271-4.

37. Sharma, N., Batra, U., Zafar, S., Trust Based Hybrid Routing Approach for Securing MANET, IEEE International Conference on Computing for Sustainable Global Development. ISBN: 978-93-80544-28-1. pp 688-693 **(Scopus Indexed).**

38. Sharma, N., **Batra, U.**, Zafar, S., (2019) A Neoteric Swarm Intelligence Stationed IOT-IWD Algorithm for Revolutionizing Pharmaceutical Industry leading to Digital Health, Emergence of Pharmaceutical Industry Growth with Industrial IOT Approach (Elsevier Chapter **(Scopus Indexed)**

39. Sharma, N., Batra, U., Zafar, S., Remit Accretion in IOT Networks Encircling Ingenious Firefly Algorithm Correlating Water Drop Algorithm, International Conference on Computational Intelligence and Data Science (ICCIDS 2019), Elsevier Procedia Computer Science. **(Scopus Indexed).**

40. Sharma, N., Batra, U., Zafar, S., QoS Optimization in Networks through Swarm Intelligence Algorithm for Sustainable Big Data Management, Accepted in International Conference on Emerging Trends in Information Technology-2019 for Lecture Notes in Electrical Engineering. **(Scopus Indexed)**.

41. Vyas, A., **Batra, U.** (2018). SR ECDC-Secure and Reliable Embedded Cyber Device Communication. In Proc. Of INDIACom2018-Computing for Nation Development, Bharti Vidypeeth, New Delhi, IEEE International Conference, 2018. pp 3517-3521 **(Scopus Indexed)**

42. Vyas, A., **Batra, U.**, Smart system for detection of BOTs in cyber physical environment, International Conference on Sustainable Computing in Science, Technology & Management (SUSCOM-2019), Amity University Rajasthan, Jaipur – India, February 26-28, 2019. pp 53-58. http://dx.doi.org/10.2139/ssrn.3350883

43. Saluja, S., Batra, U. (Feb 26-28, 2019). Accessing Quality by Anti-pattern Detection in Web Services, Proceedings of International Conference on Sustainable Computing in Science, Technology and Management, Amity University, Jaipur. pp 47-52.

44. Sharma, N., Batra, U. (2017). A review on spatial domain technique based on image steganography, International Conference on Computing and Communication Technologies for Smart Nation (IC3TSN), DOI: 10.1109/IC3TSN.2017.8284444 **(Scopus Indexed)**

45. Yadav, A., **Batra, U.**, Mukherjee, S (2013). Techniques for Migrating from Object Oriented System to Aspect Oriented System". Proceedings of 7th International Conference on Advanced Computing and Communication Technologies (ICACCT), pp. 120-123.

46. Sharma, N., **Batra, U.**, Mukherjee, S. , Sachdeva, S (2012). Service Oriented Architecture: A driving force for paperless healthcare system. Paper published in proceedings of International Conference on Computer Technology and Science (ICCTS 2012) , Delhi, India. Pp. 80-84.

47. **Batra, U.**, Mukherjee, S (2011). "Enterprise Application Integration (Middleware): Integrating stovepipe applications of varied enterprises in distributed middleware with Service Oriented Architecture". Paper published in proceedings of IEEE International Conference on Electronics Computer Technology (ICECT), Kanyakumari, India. 978-1-4244-8677-9/11 v5-232-236. **(Scopus**

Indexed)

48. **Batra, U.**, Mukherjee, S (2011). Software Design Patterns for message driven service oriented integration of stovepipe applications in healthcare enterprise. Paper published in Recent Researches in Applied Computer and Applied Computational Science proceedings of WSEAS International Conference, Venice, Italy ISBN: 978-960-474-281-3, pp. 211-216. http://portal.acm.org/citation.cfm?id=1965646 **(Scopus Indexed)**

49. Dahiya, D., **Batra, U.**, Dahiya, S (2009). Information Management as Aspect Requirements in Data Warehouse. IEEE Proceedings of the 3rd International Conference on New Trends in Information and Service Science, Beijing, China (NISS), ISSN: 978-0-7695-3687-3, pp. 924 – 931.

50. Dahiya, D., **Batra, U** (2009). Defining Business Requirements as Concerns in Data Warehouse. IEEE Proceedings of the 2nd IEEE International Conference on Computer Science and Information Technology, Beijing, China (ICCSIT), Vol. 4, ISSN: 978-1-4244-4519-6, pp. 535 – 538.

51. Dahiya, D., **Batra, U.**(2009)Modularization of Concerns in a Distributed Framework: An Aspect Oriented Approach. IEEE Proceedings of International Conference on Education and Information Technology Applications, Beijing, China (IEEE EITA 2009) Vol. 5, ISSN: 978-1-4244-4519-6 pp. 64 – 68.

52. Dahiya, D., **Batra, U.** Improving Software Design using Aspects in Distributed Computing. Paper published in the IEEE Proceedings of the 5th IEEE International Conference on Networked Computing, Seoul, Korea (IEEE INC 2009), Aug 25 – 27, 2009. ISSN: 978-0-7695-3769-6, pp: pp. 882-887

53. **Batra, U.**, Dahiya, D. (2009) Enterprise Knowledge Management Systems: Role of Aspects and Distributed Middleware Framework. IEEE Proceedings of the 5th International Conference on Advanced Information Management and Service, Seoul, Korea (IMS), Aug 25 – 27, 2009, ISSN: 978-0-7695-3769-6, pp. 864-869

54. **Batra, U.**, Dahiya, D., Bhardwaj, S. (2008). Analytical Comparison of Distributed Object Components. Proceedings of the WSEAS Conference on Recent Advances in Systems, Communications & Computers, Hangzhou, China (ISSN 1790–5117), pp.254–259,2008. http://portal.acm.org/citation.cfm?id=1415743.1415786&coll=&dl=& CFID=://www.google.co.in/search?hl=en&CFTOKEN=www.google.c o.in/search?hl=en **(Scopus Indexed)**

55. Dahiya, D., **Batra, U.**, Dahiya, S (2008). "Validating Requirements and Design Parameters for Aspects". Proceedings of the International Conference on Software Engineering Research and Practice, Las Vegas, US (WORLDCOMP SERP 2008), pp. 362 – 368. http://www.world-academy-ofscience.org/worldcomp08/ws/conferences/serp08

56. **Batra, U.**, (2008). Performance Assessment Framework for Distributed Object Architectures. Proceedings of National Conference on Mechanism Science and Technology: from Theory to

Application, November 13-14, 2008 at National Institute of Technology, Hamirpur.

PhD Supervision	8 scholars have successfully completed PhD
Awards/Recognitions	1. Indian Achievers' Award 2021 for Excellence In Education. In Recognition of Outstanding Professional Achievement & Contribution in Nation Building 2. Dr APJ Abdul Kalam Puraskar 2022 for Excellence in Research & Innovation by ICSRR regd. with NITI Aayog. 3. 7th Rank in M.D. University (2002-2003) 4. Best Research Paper Award in 3rd International Conference on Computing Informatics & Networks (ICCIN-2020) 5. Best Research Paper Award in 3rd international conference on Emerging Technologies in Data Mining and Information Security (IEMIS 2022)