

ਪ੍ਰੋਫਾਈਲ: ਡਾ. ਬ੍ਰਹਮਲੀਨ ਕੌਰ ਸਿੱਧੂ

1. ਨਾਮ: ਡਾ. ਬ੍ਰਹਮਲੀਨ ਕੌਰ ਸਿੱਧੂ
2. ਅਹੁਦਾ: ਅਸਿਸਟੈਂਟ ਪ੍ਰੋਫੈਸਰ (CAS ਪੜਾਅ 3)
3. ਵਿਭਾਗ: ਕੰਪਿਊਟਰ ਸਾਇੰਸ ਅਤੇ ਇੰਜੀਨੀਅਰਿੰਗ ਵਿਭਾਗ
ਪੰਜਾਬੀ ਯੂਨੀਵਰਸਿਟੀ, ਪਟਿਆਲਾ
4. ਪਤਾ: ਕੰਪਿਊਟਰ ਸਾਇੰਸ ਅਤੇ ਇੰਜੀਨੀਅਰਿੰਗ ਵਿਭਾਗ
ਪੰਜਾਬੀ ਯੂਨੀਵਰਸਿਟੀ, ਪਟਿਆਲਾ, ਪੰਜਾਬ-147002
ਈ-ਮੇਲ: brahmaleen.ce@pbi.ac.in, brahmaleen.sidhu@gmail.com
ਫੋਨ ਨੰਬਰ: +91-9501008858



5. ਸੰਖੇਪ ਬਾਇਓਡਾਟਾ

ਡਾ. ਬ੍ਰਹਮਲੀਨ ਕੌਰ ਸਿੱਧੂ, ਪੰਜਾਬੀ ਯੂਨੀਵਰਸਿਟੀ ਪਟਿਆਲਾ ਦੇ ਕੰਪਿਊਟਰ ਸਾਇੰਸ ਅਤੇ ਇੰਜੀਨੀਅਰਿੰਗ ਵਿਭਾਗ ਵਿੱਚ ਸਹਾਇਕ ਪ੍ਰੋਫੈਸਰ ਹਨ ਅਤੇ ਇਹਨਾਂ ਦਾ 18 ਸਾਲਾਂ ਦਾ ਅਧਿਆਪਨ ਤਜਰਬਾ ਹੈ। ਇਹਨਾਂ ਨੇ ਪੀ.ਐਚ.ਡੀ. (ਫੈਕਲਟੀ ਆਫ ਇੰਜੀਨੀਅਰਿੰਗ ਐਂਡ ਟੈਕਨੋਲੋਜੀ) ਪੰਜਾਬੀ ਯੂਨੀਵਰਸਿਟੀ ਤੋਂ, ਐਮ.ਟੈਕ. (ਕੰਪਿਊਟਰ ਸਾਇੰਸ ਅਤੇ ਇੰਜੀਨੀਅਰਿੰਗ) ਪੰਜਾਬ ਟੈਕਨੀਕਲ ਯੂਨੀਵਰਸਿਟੀ ਤੋਂ ਅਤੇ ਬੀ.ਟੈਕ. (ਕੰਪਿਊਟਰ ਸਾਇੰਸ ਅਤੇ ਇੰਜੀਨੀਅਰਿੰਗ) ਪੰਜਾਬੀ ਯੂਨੀਵਰਸਿਟੀ ਤੋਂ ਕੀਤੀ ਹੈ। ਇਹਨਾਂ ਦੀਆਂ ਖੋਜ ਰੁਚੀਆਂ ਵਿੱਚ ਸਾਫਟਵੇਅਰ ਆਰਕੀਟੈਕਚਰ, ਸਾਫਟਵੇਅਰ ਐਵੇਲੂਏਸ਼ਨ, ਸਾਫਟਵੇਅਰ ਕਵਾਲਿਟੀ, ਰੀਫੈਕਟਰਿੰਗ, ਮਾਡਲ-ਡਰਿਵਨ ਡਿਵੈਲਪਮੈਂਟ, ਡਾਟਾ ਸਾਇੰਸ ਅਤੇ ਮਸ਼ੀਨ ਲਰਨਿੰਗ ਸ਼ਾਮਲ ਹਨ। ਡਾ. ਸਿੱਧੂ ਦੇ ਅੰਤਰ-ਰਾਸ਼ਟਰੀ ਰਸਾਲਿਆਂ ਅਤੇ ਕਾਨਫਰੰਸਾਂ ਵਿੱਚ ਲਗਭਗ 80 ਖੋਜ ਪੱਤਰ ਪ੍ਰਕਾਸ਼ਿਤ ਹੋਏ ਹਨ। ਡਾ. ਸਿੱਧੂ ਦੁਆਰਾ ਲਿਖੀ ਕਿਤਾਬ 'ਏ ਹੈਂਡਬੁੱਕ ਆਫ ਰੀਇਨਫੋਰਸਮੈਂਟ ਲਰਨਿੰਗ' 2023 ਵਿੱਚ ਪ੍ਰਕਾਸ਼ਿਤ ਹੋਈ। ਇਹਨਾਂ ਦੇ ਲੇਖ 'ਪੰਜਾਬੀ ਟ੍ਰਿਬਿਊਨ' ਅਖਬਾਰ ਵਿੱਚ ਵੀ ਪ੍ਰਕਾਸ਼ਿਤ ਹੋਏ ਹਨ। ਡਾ. ਸਿੱਧੂ ਨੂੰ 2021 ਵਿੱਚ ਇੰਟਰਨੈਸ਼ਨਲ ਇੰਸਟੀਚਿਊਟ ਆਫ ਆਰਗੇਨਾਈਜ਼ਡ ਰਿਸਰਚ ਦੁਆਰਾ 'ਇੰਟਰਨੈਸ਼ਨਲ ਇਨੋਵੇਟਿਵ ਐਜੂਕੇਟਰ ਅਵਾਰਡ' ਨਾਲ ਸਨਮਾਨਿਤ ਕੀਤਾ ਗਿਆ ਅਤੇ '2021 ਦੇ 100 ਉੱਘੇ ਅਕਾਦਮਿਕ ਵਿਗਿਆਨੀਆਂ' ਵਿੱਚ ਸੂਚੀਬੱਧ ਕੀਤਾ ਗਿਆ।

PROFILE: DR. BRAHMALEEN K. SIDHU

1. **NAME:** Dr. Brahmaleen K. Sidhu
2. **DESIGNATION:** Assistant Professor (CAS Stage 3)
3. **DEPARTMENT:** Department of Computer Science and Engineering
Punjabi University
4. **ADDRESS:** Room no. 316
Department of Computer Science and Engineering
Punjabi University, Patiala, Punjab-147002
Phone: +91 95010 08858
Email: brahmaleen.ce@pbi.ac.in, brahmaleen.sidhu@gmail.com
5. **ORCID:** <https://orcid.org/0000-0001-6519-7957>
SCOPUS ID: <https://www.scopus.com/authid/detail.uri?authorId=57201698524>
GOOGLE SCHOLAR ID: https://scholar.google.com/citations?user=QKv_ET0AAAAJ&hl=en



6. BIOGRAPHY

Dr. Brahmaleen K. Sidhu is an academician with 18 years of experience in research, development, and teaching in computer science and engineering. Her research interests include software architecture, software evolution, software quality, refactoring, model-driven development, data science and machine learning. Dr. Sidhu has published around 80 research papers in reputed international journals and conferences. She has authored a book titled ‘A Handbook of Reinforcement Learning’ and some writings in the Punjabi Tribune newspaper. Dr. Sidhu has participated in radio talks on AIR Jalandhar and AIR Patiala. She was awarded the ‘International Innovative Educator Award 2021’ and listed in ‘100 Eminent Academicians of 2021’ by International Institute of Organized Research. She is serving as reviewer for various journals from reputed publishers like Elsevier, Springer, World Scientific, Taylor & Francis and IEEE.

7. EDUCATIONAL QUALIFICATION

- a. Ph.D. (Faculty of Engineering and Technology), Punjabi University, 2019
Thesis Title: Development of Refactoring Technique for Architecture-Based Evolution of Object-Oriented Software Systems
- b. M.Tech. (Computer Science and Engineering), Punjab Technical University, 2010
Dissertation Title: Identification of Proverbs in Hindi Text Corpus and their Translation into Punjabi
- c. B.Tech. (Computer Science and Engineering), Punjabi University, 2005
Other: GATE 2012 qualified

8. WORK EXPERIENCE

- a. Assistant Professor (Regular), Department of Computer Science and Engineering, Punjabi University, Patiala, November 2011 onwards
- b. Assistant Professor (Contractual Basis), University College of Engineering, Punjabi University, Patiala, August 2009 to November 2011
- c. Lecturer (Regular), Jasdev Singh Sandhu Institute of Engineering and Technology, Patiala, July 2009 to August 2009
- d. Lecturer (Contractual Basis), University College of Engineering, Punjabi University, Patiala, January 2009 to May 2009
- e. Lecturer (Guest Faculty), University College of Engineering, Punjabi University, Patiala, January 2006 to December 2008

9. PAPERS/ COURSES TAUGHT

- a. At undergraduate level (B.Tech.):
Artificial Intelligence, Machine Learning, Compiler Design, Object-Oriented Programming using C++, Computer Graphics, Visual Programming using VB.Net, Software Engineering, Mobile Applications Development, Data Mining and Warehousing, Data Structures using C/C++, Cryptography and Network Security
- b. At postgraduate level (M.Tech., MCA, M.Sc.):
Advanced Artificial Intelligence, Business Intelligence, Design and Analysis of Algorithms, Operating Systems, Research Methodology, Decision Support Systems

10. AWARDS AND RECOGNITIONS

1. Listed in “100 Eminent Academicians of 2021” by International Institute of Organized Research (I2OR), a registered MSME with the Ministry of Micro, Small and Medium Enterprises, Government of India.
2. Awarded the “International Innovative Educator Award 2021”, instituted by the International Institute of Organized Research (I2OR), a registered MSME with the Ministry of Micro, Small and Medium Enterprises, Government of India.
3. Awarded “Best Paper Award” in International Conference on Applied Data Science and Smart Systems organized by Chitkara University, Punjab in November 2022.
4. Awarded “Best Paper Award” in International Conference on Innovations in Communication Computing and Sciences organized by Chandigarh University, Punjab in March 2024.

11. BOOKS PUBLISHED

1. Title of the book: “A Handbook of Reinforcement Learning”
Year of Publication: 2023

Publisher: Twentyfirst Century Publications

ISBN: 978-81-19367-77-1

12. PATENTS

1. Title of the invention: A SYSTEM OF DEEP LEARNING CUSTOMER CHURN PREDICTION MODEL IN E-COMMERCE USING DATA MINING
Publication Date: 17/12/2021 (FILED)
2. Title of Design Patent: MACHINE LEARNING BASED SYSTEM FOR IRRIGATION
Grant date: 05 April 2024

13. ARTICLES IN NEWSPAPERS

1. Article titled “ਕੁਆਂਟਮ ਲੀਪ: ਕਲਾਸੀਕਲ ਕੰਪਿਊਟਿੰਗ ਦੀਆਂ ਸੀਮਾਵਾਂ ਤੋਂ ਪਰੇ” published in Punjabi Tribune dated 30th January 2024.
2. Article titled “ਜਨਰੇਟਿਵ ਆਰਟੀਫੀਸ਼ੀਅਲ ਇੰਟੈਲੀਜੈਂਸ: ਰਚਨਾਤਮਕ ਮਸ਼ੀਨਾਂ ਦਾ ਉਭਾਰ” published in Punjabi Tribune dated 23rd April 2024.

14. ALL INDIA RADIO TALKS

- a. Talk on ‘Technology for Women Safety’ on FM 100.2 MHz Akaashvaani Patiala on 18th December 2023.
- b. Talk on ‘Quantum Computing’ on FM 102.7 MHz AIR Rainbow Jalandhar on 31st January 2023.
- c. Talk on ‘Girls in ICT’ on FM 102.7 MHz AIR Rainbow Jalandhar on 25th April 2024.

15. EXPERT LECTURES

- a. Acted as resource person and delivered expert lecture on “Data-Centric Approach to Machine Learning using Python” in Faculty Development Program on “Recent Advances and Future Trends in Artificial Intelligence, Computer Vision, and NLP” organized by E&ICT Academy, IIT Roorkee on 31st October 2023.
- b. Delivered expert lecture on “Artificial Intelligence Advances in Recent Times” in Government High School, Patiala on 20th January 2024.

16. CONTRIBUTIONS IN JOURNALS AS PAPER REVIEWER

- a. International Journal of Software Engineering and Knowledge Engineering published by World Scientific Publishing Co Pte Ltd (indexed in **SCIE**)
- b. International Journal of Computers and Applications published by Taylor & Francis (indexed in **SCIE**)
- c. IEEE Access published by Institute of Electrical and Electronics Engineers (indexed in **SCIE**)
- d. Decision Analytics Journal published by Elsevier (indexed in **SCIE**)

- e. Computers, Materials & Continua published by Tech Science Press (indexed in **SCI**)
- f. Applied Artificial Intelligence published by Taylor & Francis (indexed in **SCIE**)
- g. SN Computer Science published by Springer Nature (indexed in **SCOPUS** and **ACM**)
- h. Software Quality Journal published by Springer Nature (indexed in **SCOPUS** and **SCIE**)
- i. Automatika-Journal for Control, Measurement, Electronics, Computing and Communications (indexed in **SCOPUS** and **SCIE**)

17. CONTRIBUTIONS IN CONFERENCES AS PAPER REVIEWER / SESSION CHAIR

- a. National Conference on Advances in Applied Sciences and Mathematics (NCASM-20) organized by Chitkara University, Punjab, India. (September 24-25, 2020)
- b. IEEE 9th International Conference on Reliability, Infocom Technologies and Optimization (ICRITO'2021) organized by Amity Institute of Information Technology, Amity University, Uttar Pradesh, India. (September 3-4, 2021)
- c. International Conference on Applications of AI and Machine Learning, organized by Department of Computer Science and Engineering, Punjabi University, Punjab, India. (December 2-3, 2021)
- d. IEEE International Conference on Computational Performance Evaluation (ComPE-2021) organized by Department of Biomedical Engineering, North-Eastern Hill University, Meghalaya, India. (December 1-3, 2021)
- e. National Seminar on Role of Artificial Intelligence & Automation in Modern Age Agriculture (NSAIAMAA-2022) organized by Department of Computer Science and Engineering, Punjabi University, Punjab, India. (July 12, 2022)
- f. First International Conference on Applied Data Science and Smart Systems (ADSSS-2022) organized by Department of Computer Applications, Chitkara University, Punjab, India. (November 4-5, 2022)
- g. Fourth International Conference on Innovative Trends in Electronics Engineering and Symposium on Advances in Optics and Photonics organized by Department of Electronics and Communication Engineering, Punjabi University, Punjab, India in association with IEEE-Prakash Bharati and IEEE Photonics Society Rajasthan Chapter, Delhi Section. (27 April 2023)
- h. Third IEEE International Conference on Electrical, Computer, Communications and Mechatronics Engineering (ICECCME) organized by Aksaray University and Universidad de La Laguna, Tenerife, Canary Islands, Spain. (19-20 July 2023)
- i. Second International Conference on Applied Data Science and Smart Systems (ADSSS-2023) organized by Department of Computer Applications, Chitkara University, Punjab, India. (December 15-16, 2023)

- j. Third International Conference on Applied Data Science and Smart Systems (ADSSS-2024) organized by Department of Computer Applications, Chitkara University, Punjab, India. (December 13-14, 2024)
- k. International Conference on Intelligent Computing and Communication Techniques (ICICCT 2024) organized by Jawaharlal Nehru University, New Delhi, India. (June 28-29, 2024)
- l. 5th IEEE India Council International Subsections Conference (INDISCON 2024) organized by Punjab Engineering College, Chandigarh, India (August 22-24, 2024)

18. RESEARCH INTERESTS

Software architecture, Software evolution, Software quality, Model-Driven Development, Data Science, Machine Learning, Artificial Intelligence.

19. RESEARCH PUBLICATIONS

Papers in International Journals: 56

Papers in International Conferences: 26

Chapters in Books: 03

a. PAPERS IN JOURNALS

1. Sidhu, B. K., Singh, A., and Goyal, V. (2010). "Identification of proverbs in Hindi text corpus and their translation into Punjabi." *Journal of Computer Science and Engineering* 2(1): 32-37.
2. Garg, N. and Sidhu, B. K. (2013). "The Pragmatic Review on Watermarking Techniques in Digital Image Processing." *International Journal of Computing and Business Research* 4(2).
3. Preeti and Sidhu, B. K. (2013). "Keyphrase Extraction from Punjabi Corpus." *International Journal of Engineering Research and Applications* 3(5): 491-494.
4. Preeti and Sidhu, B. K. (2013). "Natural Language Processing." *International Journal of Computer Technology & Applications* 4(5): 751-758.
5. Kaur, B. and Sidhu, B. K. (2014). "Machine Translation: An Analytical Study." *International Journal of Engineering Research and Applications* 4(5): 168-175.
6. Kaur, B. and Sidhu, B. K. (2014). "Methods for Keyphrase Extraction from Documents." *International Journal for Technological Research in Engineering* 1(5): 249-255.
7. Kaur, D. and Sidhu, B. K. (2014). "Network Authentication Encryption Protocol Based on Kerberos: A Review." *An International Journal of Engineering Sciences* 1(12): 68-72.
8. Kaur, G. and Sidhu, B. K. (2014). "Proposing Efficient Neural Network Training Model for Thyroid Disease Diagnosis." *International Journal for Technological Research in Engineering* 1(11): 1383-1386.

9. Kaur, G. and Sidhu, B. K. (2014). "Artificial Neural Networks for Diagnosis of Thyroid." *International Journal of Technological Research in Engineering* 2(1): 56-59.
10. Kaur, J. and Sidhu, B. K. (2014). "Word Sense Disambiguation Methodologies." *International Journal of Advanced and Innovative Research* 3(7): 22-29.
11. Singh, I. and Sidhu, B. K. (2015). "Service Quality in Banking Sector in Reference to Role of Information Technology." *International Journal for Multi-Disciplinary Engineering and Business Management* 3(3): 69-73.
12. Singh, J. and Sidhu, B. K. (2015). "Enhanced Load Balancing Architecture using EE-GA." *International Journal of Computer Applications* 131(7): 1-6. DOI: 10.5120/ijca2015905703
13. Arora, P. and Sidhu, B. K. (2015). "An Approach for Sentiment Analysis of Punjabi Text." *International Journal of Information Technology & Computer Sciences Perspectives* 4(2): 1464-1470.
14. Arora, P. and Sidhu, B. K. (2015). "Sentiment Analysis of Political Reviews in Punjabi Language." *International Journal of Computer Applications* 126(14): 20-23. DOI: 10.5120/ijca2015906297
15. Aurora, T. and Sidhu, B. K. (2015). "Design and Implementation of Semantic based Search Engine for Punjabi." *International Journal of Computer Applications* 126(14): 24-27.
16. Aurora, T. and Sidhu, B. K. (2015). "Semantic Based Search Engine." *International Journal of Information Technology & Computer Sciences Perspectives* 4(2): 1471-1477.
17. Bawa, S. S. and Sidhu, B. K. (2015). "E-Banking Usage and its Satisfaction among the Customers from Public and Private Banks." *International Journal for Multi-Disciplinary Engineering and Business Management* 3(3): 66-68.
18. Kaur, D. and Sidhu, B. K. (2015). "Substitution Based Encryption Decryption Algorithm by using DES and RSA." *Advances in Computer Science and Information Technology* 2(8): 30-33.
19. Parul and Sidhu, B. K. (2016). "Generalization Index: Defining a metric for the detection of smells in UML Class Diagrams in Eclipse Modeling Framework in Eclipse." *International Journal on Recent and Innovation Trends in Computing and Communication* 4(7): 209-210.
20. Parul and Sidhu, B. K. (2016). "Model Smells In UML Class Diagrams." *International Journal on Recent and Innovation Trends in Computing and Communication* 5(5): 1-13.
21. Parul and Sidhu, B. K. (2016). "Optimizing Bit Vector Algorithm for Anti-Pattern Detection." *International Journal of Enhanced Research in Science, Technology & Engineering* 5(5): 77-79.
22. Parul and Sidhu, B. K. (2016). "Optimizing Bit Vector Algorithm for Anti-Pattern Detection." *International Journal of Latest Trends in Engineering and Technology Special*

Issue-RICSIT-2016: 20-23.

23. Kaur, J. and Sidhu, B. K. (2016). "A Review of Detection of Model Smells in UML Model." *Research Cell: An International Journal of Engineering Sciences* 22 (Special Issue-ICRTC-2016): 486-492.
24. Kaur, G. and Sidhu, B. K. (2017). "Online Punjabi Spell Checker for Error Detection and Correction System for Punjabi Unicode Using Hybrid Approach." *International Journal for Multi-Disciplinary Engineering and Business Management* 5(3): 42-46.
25. Kaur, G. and Sidhu, B. K. (2017). "A Review Paper on Spelling Errors Detection and Correction." *International Journal for Multi-Disciplinary Engineering and Business Management* 5(3): 47-50.
26. Kaur, J. and Sidhu, B. K. (2017). "A Survey on Lightweight Block Ciphers for Wireless Sensor Network." *International Journal of Advanced Research in Computer Science* 8(5): 2517-2520.
27. Kaur, J. and Sidhu, B. K. (2017). "Task Scheduling in Cloud Computing Using Various Techniques." *International Journal of Advanced Research in Computer Science* 8(5): 2716-2719.
28. Kaur, J. and Sidhu, B. K. (2018). "Sentiment Analysis Based on Deep Learning." *Global Journal of Engineering Science and Researches* 5(7): 336-345.
29. Kaur, K. and Sidhu, B. K. (2018). "A Review of Searchable Encryptions over Cloud Data Sources." *International Journal of Research in Electronics and Computer Engineering* 6(4): 6-9.
30. Kaur, K. and Sidhu, B. K. (2018). "A Review of Various Security Techniques in Cloud Computing." *International Journal on Future Revolution in Computer Science & Communication Engineering* 4(5): 85-87.
31. Kaur, R. and Sidhu, B. K. (2018). "An Empirical Study of Knowledge Sharing in Agile Organisations: An Indian Perspective." *International Journal of Computer Sciences and Engineering* 6(12): 961-967. DOI: 10.26438/ijcse/v6i12.961967
32. Pallak and Sidhu, B. K. (2018). "An Effectual Classification of Automatic Brain Tumors: A Review." *International Journal of Emerging Technologies and Innovative Research* 5(12): 400-404.
33. Sahota, J. K., Sidhu, B. K., and Kaur, T. (2016). "Application of Data Mining Techniques on Public and Private Hospital's Record." *International Journal for Multi-Disciplinary Engineering and Business Management* 4(3): 12-19.
34. Sharma, R. and Sidhu, B. K. (2017). "A Proposed Approach for Code Clone Detection." *International Journal in Applied Studies and Production Management* 3(3): 73-77.

35. Sharma, R. and Sidhu, B. K. (2017). "A Survey on Trending Algorithms for Software Code Clone Detection." *International Journal of Computer Applications* 170(5): 8-14. DOI: 10.5120/ijca2017914835
36. Sidhu, B. K., Singh, K., and Sharma, N. (2018). "Refactoring UML Models of Object-Oriented Software: A Systematic Review." *International Journal of Software Engineering and Knowledge Engineering* 28(9): 1287-1319. DOI: 10.1142/S0218194018500365
37. Singla, M. and Sidhu, B. K. (2019). "News Classification Using Hybrid Approach of PSO-KNN." *International Journal of Scientific & Technology Research* 8(8): 1854-1860.
38. Singla, M. and Sidhu, B. K. (2019). "A review on different classification techniques for text classification." *Journal of Emerging Technologies and Innovative Research* 6(6): 166-170.
39. Bhathal, B. S., Gupta, G. and Sidhu, B. K. (2020). "Study of Ambient Air Pollution Forecasting Using Artificial Neural Network." *Journal of Xidian University* 14(9): 949-963. DOI: 10.37896/jxu14.9/107
40. Kaur, A. and Sidhu, B. K. (2020) "Comparison of Machine Learning Based Classification Techniques for Credit Card Fraud Detection" *GIS Science Journal* 7(12): 1187-1196. DOI: 20.18001.GSJ.2020.V7I11.20.36223
41. Kaur, A. and Sidhu, B. K. (2020) "Credit Card Fraud Detection using Anomaly Detection" *Journal of Innovation in Computer Science and Engineering* 10(1): 7-12.
42. Sidhu, B. K. (2022) "Unlocking the Power of Quantum Mechanics for Machine Learning" *International Journal of Science and Research* 11(3): 1574-1582. DOI: 10.21275/SR24427201406
43. Sidhu, B. K., Singh, K., and Sharma, N. (2022). "A machine learning approach to software model refactoring." *International Journal of Computers and Applications* 44(2): 166-177. DOI: 10.1080/1206212X.2020.1711616
44. Kohli, P., Singh, K. and Sidhu, B. K. (2022). "Optimal Parameter Selection for Women Safety Analysis." *Journal of Data Acquisition and Processing* 37(5): 1274-1302. DOI: 10.5281/zenodo.7609360
45. Bhathal, B., Gupta, G. and Sidhu, B. K. (2022). "Concentrations of PM_{2.5} and PM₁₀ in Ambient Air Before and During Pandemic in Punjab: A Comparative Analysis." *Journal of Data Acquisition and Processing* 37(5): 2115-2120. DOI: 10.5281/zenodo.7751169
46. Kohli, P., Singh, K. and Sidhu, B. K. (2023). "An intelligent women safety app for educational campus." *Computer Applications in Engineering Education* 31(5): 1190-1199. DOI: 10.1002/cae.22634
47. Kohli, P., Singh, K. and Sidhu, B. K. (2023). "Design of Real Time Intelligent System for Women Safety." *Recent Patents on Engineering* 18(3): 77-83. DOI:

10.2174/1872212118666230418114726

48. Kaur, P. and Sidhu, B.K. (2023). "Recent Machine Learning Advances in Agriculture." *Journal Punjab Academy of Sciences* 23: 123-131
49. Dhiman, G., Gupta, G., and Sidhu, B. K. (2024). "A Review and Research Panorama on Food Recommender System Based on Health Card." *Intelligent Journal of Intelligent Systems and Applications in Engineering* 12(17s): 409-422.
50. Sidhu, B. K. (2024). "Unravelling the Complexity: Understanding the Challenges of Reinforcement Learning." *International Journal of Science and Research* 13(3): 233-239. DOI: 10.21275/SR24304190409
51. Kohli, P., Singh, K. and Sidhu, B. K. (2024). "Transforming Women Safety with Information Technology: A Mobile Real-Time Intelligence Framework." *Journal of Electrical Systems* 20(3s): 1193-1203. DOI: 10.52783/jes.1430
52. Sidhu, B. K. (2024). "Generative Artificial Intelligence: Unveiling the Potential and Challenges." *International Journal of Science and Research* 13(4): 1127-1135. DOI: 10.21275/SR24414234432
53. Sidhu, B. K. (2024). "Functional Decomposition as an Anomaly in Object-Oriented Software Design." *International Journal of Computer Sciences and Engineering* 12(4): 47-54. DOI: 10.26438/ijcse/v12i4.4754
54. Karimi, M. Z., Sidhu, B. K. and Gupta, G. (2024). "Enhanced Accessibility for Visually Impaired & Blind Artists (EAVIBA) using Machine Learning." *International Journal of Scientific Research in Engineering and Management* 8(5): 1-9. DOI: 10.55041/IJSREM32878
55. Karimi, M. Z., Sidhu, B. K. and Gupta, G. (2024). "A Case Study on Enhanced Accessibility for Visually Impaired & Blind Artists using Machine Learning." *International Journal of Scientific Research in Engineering and Management* 8(6): 1-8. DOI: 10.55041/IJSREM35763
56. Juneja, S., Bhathal, G. S. and Sidhu, B. K. (2024). "Development of optimised software fault prediction model using machine learning." *Intelligent Decision Technologies* 18(2): 1355-1376. DOI: 10.3233/IDT-230427

b. PAPERS IN CONFERENCES

1. Kaur, D. and Sidhu, B. K. (2015). "Substitution Based Encryption Decryption Algorithm by using DES and RSA." *International Conference on Innovative Research in Mechanical, Electrical, Electronics, Civil, Computer Science and Information Technology (MECIT-2015)*, Jawaharlal Nehru University, New Delhi, India.

2. Gulati, P. and Sidhu, B. K. (2016). "Optimizing Bit Vector Algorithm for Anti-Pattern Detection." International Conference on Recent Innovations in Computer Science and Information Technology (RICSIT-2016), Himachal Pradesh University, Shimla, Himachal Pradesh, India.
3. Sahota, J. K. and Sidhu, B. K. (2016). "Application of Data Mining Techniques on Public and Private Hospitals' Records: A Review." 4th International Conference on Advancements in Engineering and Technology (ICAET-2016), Bhai Gurdas Institute of Engineering & Technology, Sangrur, Punjab, India.
4. Kaur, J. and Sidhu, B. K. (2016). "A Review of Detection of Model Smells in UML Model." International Conference on Recent Trends in Computing (ICRTC-2016), Department of Computer Engineering, Punjabi University, Patiala, Punjab.
5. Kaur, J. and Sidhu, B. K. (2016). "A Review on Detection of Model Smells in UML Model." International Conference on Recent Innovations in Computer Science and Information Technology (RICSIT-2016), Himachal Pradesh University, Shimla, Himachal Pradesh, India.
6. Kaur, J. and Sidhu, B. K. (2017). "A New Flower Pollination Based Task Scheduling Algorithm in Cloud Environment." IEEE 4th International Conference on Signal Processing, Computing and Control (ISPCC), Solan, India.
7. Kaur, K. and Sidhu, B. K. (2018). "A Hybrid Approach for Efficient Data Encryption and Decryption in Cloud Computing." International Conference on recent Advances in Science, Technology & Engineering, New Delhi, India.
8. Kaur, J. and Sidhu, B. K. (2018). "Sentiment Analysis Based on Deep Learning Approaches." Second International Conference on Intelligent Computing and Control Systems (ICICCS), Madurai, India.
9. Sidhu, B. K., Singh, K., and Sharma, N. (2018). "A Catalogue of Model Smells and Refactoring Operations for Object-Oriented Software." Second International Conference on Inventive Communication and Computational Technologies (ICICCT), Coimbatore, India.
10. Sidhu, B. K., Singh, K., and Sharma, N. (2018). "Functional Decomposition as an Anomaly in Object-Oriented Software Design." International Conference on Computational Intelligence and Data Analysis, Gandhi Institute for Technology, Bhubaneswar, India.
11. Kaur, A. and Sidhu, B. K. (2020). "Credit Card Fraud Detection using Anomaly Detection." 8th International Conference on Innovations in Computer Science & Engineering (ICICSE), Guru Nanak University, Hyderabad, India.

12. Ghumman, A. and Sidhu, B. K. (2021). "Machine Learning Based Clustering of COVID-19 Symptoms." IEEE 9th International Conference on Reliability, Infocom Technologies and Optimization (ICRITO), Amity University, Noida, India.
13. Bansal, C. and Sidhu, B. K. (2021). "Machine Learning based Hybrid Approach for Email Spam Detection." IEEE 9th International Conference on Reliability, Infocom Technologies and Optimization (ICRITO), Amity University, Noida, India.
14. Dhillon, S., Bansal, C. and Sidhu, B. K. (2021). "Machine Learning Based Approach using XGboost for Heart Stroke Prediction." International Conference on Emerging Technologies: AI, IoT, and CPS for Science & Technology Applications, National Institute of Technical Teachers Training and Research (NITTTR), Chandigarh, India.
15. Ghumman, A. and Sidhu, B. K. (2021). "Statistical Analysis of Comorbidities in Deceased and Recovered COVID-19 Patients using Chi-Square Test." International Conference on Applications of AI and Machine Learning (ICAML), Department of Computer Science & Engineering, Punjabi University, India.
16. Bansal, C. and Sidhu, B. K. (2021). "Proposed COVID-19 Testing Process using Machine Learning Technique." International Conference on Applications of AI and Machine Learning (ICAML), Department of Computer Science & Engineering, Punjabi University, India.
17. Bhathal, B. S., Gupta, G. and Sidhu, B. K. (2021). "Massive Downfall in Pm2.5 and Pm10 in Punjab during Pandemic." International Conference on Applications of AI and Machine Learning (ICAML), Department of Computer Science & Engineering, Punjabi University, India.
18. Kaushik, P., Sharma, A. and Sidhu, B. K. (2022). "Comparative Analysis of Object Detection Algorithms." International Conference on Advances in Distributed Computing and Machine Learning (ICADCML), Department of Computer Science and Engineering, National Institute of Technology, Warangal, Telangana, India.
19. Juneja, S., Bhathal, G. S. and Sidhu, B. K. (2022). "Current Trends and Literature Review of Machine Learning Techniques for predicting software fault based on Textual and Numeric Data." First International Conference on Applied Data Science and Smart Systems (ADSSS), Department of Computer Applications, Chitkara University, Punjab.
20. Ghumann, A., Sidhu, B. S., Gupta, G. and Bhathal, G. S. (2022). "A Machine Learning Approach to Predict Critical Illness in Covid-19 Patients." First International Conference on Applied Data Science and Smart Systems (ADSSS), Department of Computer Applications, Chitkara University, Punjab.

21. Gupta, P., Singh, K. and Sidhu, B. K. (2022) "Demographic Data Analysis of Women Safety Parameters." First International Conference on Applied Data Science and Smart Systems (ADSSS), Department of Computer Applications, Chitkara University, Punjab.
22. Juneja, S., Bhathal, G. S. and Sidhu, B. K. (2023). "Analysis and Study of Bug Classification Quintessence and Techniques for Forecasting Software Faults." 4th International Conference on Data Analytics and Management (ICDAM), London Metropolitan University, London, UK, Karkonosze University of Applied Sciences, Jelenia Gora, Poland, Europe, Politécnico de Portalegre, Portugal, Europe and BPIT, GGSIPU, Delhi.
23. Kaur, P. and Sidhu, B. K. (2023) "Recent Machine Learning Advances in Agriculture." 4th International Conference on Innovative Trends in Electronics Engineering (ICITEE-2023), Department of Electronics and Communications, Punjabi University, Punjab.
24. Kaur, P. and Sidhu, B. K. (2024) "Crop Recommendation using Machine Learning" Second International Conference on Applied Data Science and Smart Systems (ADSSS), Department of Computer Applications, Chitkara University, Punjab.
25. Mohammadi, L, P. and Sidhu, B. K. (2024) "Recent Applications of Linear Regression in Machine Learning" Second International Conference on Applied Data Science and Smart Systems (ADSSS), Department of Computer Applications, Chitkara University, Punjab.
26. Bhathal, B. S., Gupta, G. and Sidhu, B. K. (2024). "Comparative Analysis of Machine Learning Based Forecasting Models for Air Quality Prediction." Fifth International Conference on Innovations in Communication Computing and Sciences, Department of Electronics and Communication Engineering, Chandigarh Engineering College-CGC, Mohali, Punjab, India.

c. BOOK CHAPTERS

1. Kaushik, P., Sharma, A., Kaur, B. (2022). Comparative Analysis of Object Detection Algorithms. In: Rout, R.R., Ghosh, S.K., Jana, P.K., Tripathy, A.K., Sahoo, J.P., Li, KC. (eds) Advances in Distributed Computing and Machine Learning. Lecture Notes in Networks and Systems, vol 427. Springer, Singapore. eBook ISBN 978-981-19-1018-0 https://doi.org/10.1007/978-981-19-1018-0_58
2. Juneja, S., Bhathal, G.S., Sidhu, B.K. (2023). Analysis and Study of Bug Classification Quintessence and Techniques for Forecasting Software Faults. In: Swaroop, A., Polkowski, Z., Correia, S.D., Virdee, B. (eds) Proceedings of Data Analytics and Management. ICDAM 2023. Lecture Notes in Networks and Systems, vol 787. Springer, Singapore. eBook ISBN 978-981-99-6550-2 https://doi.org/10.1007/978-981-99-6550-2_38

3. Kaur, P., Sidhu, B.K. (2024). Crop Recommendation using Machine Learning. In: Singh, J., Goyal, S., Kumar Kaushal, R., Kumar. N. & Singh Sehra, S. (eds) Proceedings of 2nd International Conference on Applied Data Science and Smart Systems ADSSS 2023. Applied Data Science and Smart Systems (1st ed.). CRC Press Taylor & Francis Group. eBook ISBN 9781003471059 <https://doi.org/10.1201/9781003471059>

20. RESEARCH GUIDANCE

Ph.D.

No. of awarded students: 01

No. of registered students: 04

No. of enrolled students: 03

M.Tech.

No. of students guided: 28

Table 1 Details of M.Tech. Guidance

S. No.	Dissertation Title	Student's Name	Submission Date
1.	Recent Applications of Linear Regression in Machine Learning	Lailoma Mohammadi	October 2023
2.	Crop Recommendation using Machine Learning	Paramveer Kaur	October 2023
3.	Machine Learning Based Approach to Predict Critical Illness in COVID-19 Patients	Amreen Ghumann	June 2022
4.	An Optimized Learning Approach for Brain Tumour Classification in Medical Applications	Pallak	August 2021
5.	Comparison of Machine Learning Based Classification Techniques for Credit Card Fraud Detection	Amanjot Kaur	January 2021
6.	News Classification Using Hybrid Approach Of PSO-KNN	Megha Singla	August 2019
7.	An Analysis of Security Algorithms Used in Cloud Computing	Kulwinder Kaur	January 2019
8.	Development of Inter-Team Learning Radiator for Agile Teams	Rajinder Kaur	October 2018
9.	Sentiment Analysis Based on Deep Learning	Jaspreet Kaur	August 2018
10.	Design of Lightweight Cipher Algorithm for Wireless Sensors	Jasvir Kaur	September 2017
11.	Task Scheduling in Cloud Computing Environment Using Flower Pollination Algorithm	Jaspinder Kaur	August 2017
12.	Spell Checking and Error Correcting System for Text Paragraphs Written in Punjabi Language using Hybrid Approach	Gurbir Kaur	August 2017
13.	A Hybrid Approach for Code Clone Detection	Rashmi Sharma	August 2017
14.	Application of Data Mining Techniques on Public and Private Hospitals' Records	Jaspinder Kaur Sahota	August 2016
15.	Development of a Metric for Smell Detection in Class Diagrams	Parul	August 2016
16.	Laganvedi (Matrimonial Portal)	Simranpreet Kaur Kaleka	June 2016

S. No.	Dissertation Title	Student's Name	Submission Date
17.	Enhanced Technique for Load Balancing using Genetic Algorithm	Jaskirat Singh	December 2015
18.	Service Quality in Banking Sector in Reference to Role of Information Technology	Inderjeet Singh	October 2015
19.	E-Banking: Customer Usage & Satisfaction	Satnam Singh	October 2015
20.	A Semantics Based Search Engine for Punjabi	Tanjyot Kaur Aurora	October 2015
21.	Sentiment Analysis of Political Reviews in Punjabi Language	Parul Arora	October 2015
22.	Substitution Based Cryptography Technique by Combining DES an RSA	Davinderpreet Kaur	June 2015
23.	Word Sense Disambiguation Methodologies	Jagdeep Kaur	July 2014
24.	Machine Translation: An Analytical Study	Baljinder Kaur	June 2014
25.	Comparison of Artificial Neural Network Algorithms for Thyroid Diagnosis	Gurmeet Kaur	October 2014
26.	Embedded Watermarking Techniques in Feature Points of Digital Image	Neha Garg	October 2014
27.	Automatic Keyphrase Extraction from Punjabi Corpus	Preeti	October 2013
28.	Comparative Analysis of TCP/FRCP Congestion Control Mechanism in Mobile Ad-Hoc Network Protocols	Saab Singh	October 2013

21. FDPs/ COURSES/ WORKSHOPS/ SEMINARS ATTENDED

Table 2 Details of FDPs, Courses, Workshops, and Seminars Attended

S. No.	Course Description	Conducted by	Dates
1.	3-Day Induction-cum-Training Programme	University College of Engineering, Punjabi University, Patiala	03/01/2012-05/01/2012
2.	Orientation Course	Punjabi University, Patiala	02/05/2013-29/05/2013
3.	Workshop on “Practical Aspects on the Importance of Patents in Research”	IPR Cell, Punjabi University, Patiala	12/02/2013
4.	National Workshop on Multilingual Technologies	Department of Computer Science, Punjabi University, Patiala in collaboration with UGC	11/11/2013-17/11/2013
5.	Refresher Course in Professional Courses (Law, Physiotherapy, M.B.A., M.C.A., Engineering, Tourism, Hospitality and Hotel Management)	UGC-Academic Staff College (ASC), Punjabi University, Patiala	12/05/2014-31/05/2014
6.	Short Term Course on “Cyber Threat Detection & Safety”	Department of Computer Engineering, Punjabi University, Patiala in collaboration with National Institute of Technical Teachers Training & Research, Chandigarh (MHRD)	04/01/2016-15/01/2016
7.	Workshop on “Latest Trends in Cloud Computing”	Department of Computer Engineering, Punjabi University, Patiala	11/04/2016-12/04/2016
8.	Workshop on “Computer Networking and Troubleshooting”	Department of Computer Engineering, Punjabi University, Patiala	04/03/2016
9.	Short Term Course on Internet of Things	National Institute of Technical Teachers Training & Research, Chandigarh (MHRD)	23/09/2019-27/09/2019
10.	Workshop on Essentials of NBA Accreditation	Department of Computer Science & Engineering, Punjabi University, Patiala	28/11/2019

S. No.	Course Description	Conducted by	Dates
11.	Short Term Course on Cyber Security	National Institute of Technical Teachers Training & Research, Chandigarh (MHRD)	09/12/2019-13/12/2019
12.	5 Module course on “Introduction to Data Science” (DS0101EN)	IBM Cognitive Class.ai	Completed on 19/04/2020
13.	6 Module course on “Introduction to Cloud” (CC0101EN)	IBM Developer Skills Network	Completed on 24/04/2020
14.	5 Module course on “Machine Learning with Python” (ML0101ENv3)	IBM Cognitive Class.ai	Completed on 28/04/2020
15.	Training on “Basics of COVID-19”	IGOT – Diksha, Department of Personnel and Training, India	22/04/2020
16.	5 Module Course on Open Science, Funding, Book Writing, Fundamentals of Peer Review and Social Impact	Elsevier Researcher Academy	April,2020
17.	Course (17 Lectures) on “Secure Coding on Frontend: Best Practices”	Bitdegree UAB	Completed on 01/05/2020
18.	Course (17 Lectures) on Marketing Analytics Course: Learn Marketing Data Analysis Basics	Bitdegree UAB	Completed on 01/05/2020
19.	National Webinar on “Intellectual Property Rights and Patenting”	IPR Club, Yadavindra College of Engineering, Punjabi University Guru Kashi Campus, Talwandi Sabo	23/05/2020
20.	FDP on Data Analytics using Python	National Institute of Technical Teachers Training & Research, Chandigarh (MHRD)	18/05/2020-22/05/2020
21.	FDP on “Cyber Security and Malware Analysis”	CMR Engineering College, Hyderabad	26/05/2020-27/05/2020
22.	National Training-cum-Webinar on “Modelling and Assembly using SolidWorks®”	Yadavindra College of Engineering, Punjabi University Guru Kashi Campus, Talwandi Sabo in collaboration with Ideas Design Solutions Pvt. Ltd.	07/06/2020
23.	Certification Course on Remote Sensing & GIS Technology and Applications for University Teachers & Government Officials	Indian Institute of Remote Sensing (IIRS), ISRO, Dehradun	13/06/2020-01/07/2020
24.	Webinar on “Employability Post COVID era: Expectations of Industry vs. Education System’s Preparedness”	Associated Chambers of Commerce and Industry of India (ASSOCHAM), India	11/07/2020
25.	Online Seminar on “Cloud Computing: Introduction, Challenges & Applications”	PG Department of Computer Science & IT, Doaba College, Jalandhar	11/07/2020
26.	Three days’ workshop on “Malware Analysis and Reverse Engineering”	National Institute of Technical Teachers Training & Research (MHRD), Chandigarh	15/07/2020-17/07/2020
27.	Technical Talk cum Webinar on “Data, Analytics and Insights”	BBSBEC ACM Student Chapter, Baba Banda Singh Bahadur Engineering College, Fatehgarh Sahib in collaboration with Eklavya Academy, Mohali	15/07/2020
28.	Refresher Course in Information Communication Technology (ICT)	UGC-Human Resource Development Centre, Punjabi University, Patiala	10/08/2020-24/08/2020

S. No.	Course Description	Conducted by	Dates
29.	One Week International Research Orientation Programme	M.M. Institute of Computer Technology and Business Management, Maharishi Markandeshwar (Deemed to be University), Haryana in association with Elsevier India and RAX Labs Inc. USA	26/10/2020-31/10/2020
30.	FDP on Python	E & ICT Academy, IIT Kanpur	14/12/2020-19/12/2020
31.	Leader 'S'peak Lecture Series: Research in Higher Education in the Perspective of NEP 2020	Centre for E-Learning and Teaching Excellence (CELTE), Punjabi University, Patiala	29/05/2021
32.	Capacity Building Program: Know About Plagiarism Detection Tools (Original and Shodhmapak)	Centre for E-Learning and Teaching Excellence (CELTE), Punjabi University, Patiala	06/08/2021
33.	Webinar on "Cyber Security and Ethical Hacking"	Department of Computer Science in collaboration with National Institute of Electronics & Information Technology, Chandigarh (NIELIT)	31/08/2021
34.	Webinar on "Next Generation Automation Management"	Turbotic in collaboration with UiPath and Sweco	09/09/2021
35.	Capacity Building Programme on Data Compilation for NAAC SSR/AQAR	Internal Quality Assurance Cell, Punjabi University, Patiala	30/11/2021
36.	Winter School	UGC Human Resource Development Centre, Guru Nanak Dev University, Amritsar	28/01/2022-11/02/2022
37.	Webinar on Machine Learning	UGC Human Resource Development Centre, Guru Nanak Dev University, Amritsar	09/03/2022
38.	Seminar on Outcome Based Education	Department of Computer Science and Engineering, Punjabi University, Patiala	21/04/2022
39.	Webinar on Copyrights: What, Why and How	Bharati Vidyapeeth's Institute of Computer Applications and Management, New Delhi	30/04/2022
40.	National Level Research Conclave	Department of Computer Science and Engineering, Institute of Technology, Nirma University, Ahmedabad	19/12/2022-20/12/2022
41.	FDP on Artificial Intelligence	Jagat Guru Nanak Dev Punjab State Open University, Patiala in collaboration with Tech Saksham	30/01/2023-03/02/2023
42.	Course on "Machine Learning Algorithms"	BYJU's Great Learning (mygreatlearning.com)	January, 2024
43.	Course on "Data Preprocessing"	BYJU's Great Learning (mygreatlearning.com)	February, 2024
44.	Short-Term Course on NEP 2020 Orientation & Sensitization Programme, under the Malaviya Teacher Training Programme	UGC Malaviya Mission Teacher Training Centre, (HRDC), Punjabi University, Patiala	05/02/2024-14/02/2024
45.	Course on "Reinforcement Learning with Python"	BYJU's Great Learning (mygreatlearning.com)	February, 2024
46.	Course on "Software Testing"	BYJU's Great Learning (mygreatlearning.com)	February, 2024
47.	Course on "Reinforcement Learning and Deep Learning Essentials" (ML0105EN)	IBM Cognitive Class.ai	February, 2024
48.	Course on "Precise Predictions: Classification for Flower and Tumors" (GPXX0TRPEN)	IBM Developer Skills Network	Completed on 2/19/2024

S. No.	Course Description	Conducted by	Dates
49.	Course on “Predictions: Regression for Car Mileage and Diamond Price” (GPXX0AEIEN)	IBM Developer Skills Network	Completed on 2/19/2024
50.	Course on “Customer Clustering with KMeans to Boost Business Strategy” (GPXX0MYEN)	IBM Developer Skills Network	Completed on 2/19/2024
51.	Course on “GitHub Tutorial for Beginners”	BYJU’s Great Learning (mygreatlearning.com)	March, 2024
52.	Generative AI Explained	NVIDIA	April, 2024
53.	FDP on “Effect of Generative AI in Modern Research and Industry”	Sister Nivedita University, India	29/04/2024-03/05/2024

22. ADDITIONAL DEPARTMENTAL DUTIES

- a. Member of Board of Studies (Faculty of Engineering and Technology, Punjabi University, 2021-22)
- b. Member of Administrative Committee of Department (2016-17)
- c. Member of Departmental Research Board (2019 onwards)
- d. President of Technical Society (2021-23)
- e. Coordinator of M.Tech. (Computer Science and Engineering) (2013-19, 2021 onwards)
- f. Member of various departmental committees like Board of Studies, Admission and Counselling, Internal Quality Assurance, Fee Concession, Examination Conduct, SAF, Conference and Workshop Organization, Technical and Cultural Events Organization

23. MEMBERSHIPS OF INTERNATIONAL / NATIONAL BODIES

- a. Member of International Association of Engineers (IAENG), Member No.:144400
- b. Member of Association for Computing Machinery (ACM), Client Number: 8666767
- c. Member of Advisory Board of International Journal for Multi-Disciplinary Engineering and Business Management
- d. Member of Editorial Board of Research Cell: An International Journal of Engineering Sciences (IJOES)

Dr. Brahmaleen K. Sidhu

June, 2024