Curriculum Vitae

Dr. Pritpal Singh

Assistant Professor
Department of Data Science & Analytics
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Adjunct (Research) Professor [The Jagiellonian University, Poland]
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World's Top 2% of Scientists in 2023, 2024 and 2025 in under AI/ ML/ Quantum Computing

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Last updated: December 29, 2025

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Professional Summary

Pritpal Singh received the Ph.D. degree in computer science and engineering from Tezpur (Central) University, Tezpur, India, in February 2015. He received a Master Degree in Computer Applications from Dibrugarh University, Assam (India), in 2008. From July 2009 to June 2013, he was a Senior Research Fellow at the Department of Computer Science and Engineering, Tezpur (Central) University. In July 2013, he was appointed as a Lecturer at the School of Mathematics and Computer Applications, Thapar University, Punjab (India). From November 2015 to February 2019, he worked as an Assistant Professor at the Faculty of Computer Applications (FCA), CHARUSAT Campus, Anand, Gujarat (India).

He has been appointed as a Faculty with the School of Mathematics and Computer Applications, Thapar University, Patiala, India, in July 2013. He worked as a Postdoctoral Research Fellow with the Department of Electrical Engineering, National Taipei University of Technology, New Taipei, Taiwan, and as an Adjunct Professor (Research) with the Institute of Theoretical Physics, Jagiellonian University, Poland. He is currently an Assistant Professor with the Department of Data Science and Analytics, Central University of Rajasthan, Ajmer, India.

He has published numerous papers in refereed SCI journals, conference proceedings, book chapters, and books. His research articles can be found in IEEE Transactions on Systems, Man and Cybernetics: Systems, Information Sciences (Elsevier), Artificial Intelligence in Medicine (Elsevier), Computer Methods and Programs in Biomedicine (Elsevier), Knowledge-Based Systems (Elsevier), International Journal of Approximate Reasoning (Elsevier), Engineering Applications of Artificial Intelligence (Elsevier), Applied Soft Computing (Elsevier), Journal of Computational Science (Elsevier), Computers in Industry (Elsevier), Expert Systems With Applications (Elsevier), among others.

His research interests include ambiguous set theory, optimization algorithms (especially quantum-based optimization), time series forecasting, image analysis, fMRI data analysis, machine learning, and mathematical modeling and simulation.

Dr. Singh has been awarded a Postdoctoral Research Fellowship from the Ministry of Science and Technology, Taiwan, in March 2019. He also received the prestigious International Visiting Research Fellowship from the Foundation for Polish Science, Poland, in 2020.

Dr. Singh's name has been continuously listed among the world's top 2% of scientists in 2023, 2024 and 2025.

Academic Positions

- Assistant Professor (June 08, 2022–Present): Department of Data Science and Analytics, Central University of Rajasthan, Ajmer-305817, Rajasthan, India
- Assistant Professor (Nov. 28, 2015–Feb. 23, 2019): Department of Computer Application, Charotar University of Science and Technology (CHARUSAT), Anand-388421, Gujarat, India
- Lecturer (Jun. 27, 2013–Nov. 23, 2015): Department of Computer Science and Engineering, Thapar University, Patiala-147004, Punjab, India

Research Positions

- Adjunct Professor (Research) (Nov. 16, 2020–March 31,2022): Institute of Theoretical Physics, Jagiellonian University, ul.Łojasiewicza 11, Kraków 30-348, Poland
- Postdoctoral Research Fellow (Mar. 01, 2019–Feb. 29, 2020): Department of Electrical Engineering, National Taipei University of Technology, Taipei, Taiwan 10608

Education

- Ph.D. (2009 – 2015): Computer Science and Engineering, Department of Computer Science & Engineering, Tezpur (Central) University, Assam, India
- Post Graduation (2005 – 2008): Master in Computer Applications (MCA), Dibrugarh University, Assam, India
- Graduation (2002 – 2005): B.Sc. with Physics, Chemistry & Mathematics, Dibrugarh University, Assam, India
- Pre-Degree (2000 – 2002): Higher Secondary in Science, Assam Higher Secondary Education Council, Assam, India
- HSLC (1999): High School Leaving Certificate, Secondary Education Board of Assam, Assam (India)

About Ph.D. Thesis

- Title: Applications of Soft Computing in Time Series Forecasting
- Advisor: Dr. Bhogeswar Borah, Professor, Department of Computer Science and Engineering, Tezpur (central) University, Assam (India)
- Registration No.: 018 of 2013
- Date of Enrollment: Jul. 27, 2009
- Degree Awarded: Feb. 16, 2015

Research Statement

- **On ambiguous set theory:** Ambiguous set theory, proposed by Dr. Singh, is a new branch of mathematics and logic that deals with the representation and analysis of uncertainty and imprecision in data. His work focuses on exploring the properties and applications of ambiguous sets, which extend traditional fuzzy sets by incorporating additional membership degrees to represent uncertainty more comprehensively. This includes the development of novel mathematical models for dealing with membership degrees such as "true," "false," "partially true," and "partially false," allowing for more nuanced classification of elements. Singh's research also delves into the practical application of ambiguous set theory in various fields, including data science, decision-making, and optimization. Additionally, he has contributed to the theoretical underpinnings of ambiguous set theory, offering new insights into its operational semantics, algebraic structures, and integration with other advanced mathematical frameworks like fuzzy logic and interval analysis. His work aims to enhance the ability to model real-world systems where certainty is not always achievable, providing tools for more accurate and reliable decision-making processes.
- **On quantum optimization algorithm:** Dr. Singh has conducted extensive research in the field of quantum wavefunction optimization algorithms, focusing on developing novel approaches to enhance the efficiency and accuracy of quantum computations. His work explores the application of optimization techniques to solve complex problems in quantum mechanics, particularly in the context of improving the accuracy of quantum wavefunction solutions. Through the integration of metaheuristic algorithms such as Genetic Algorithms, Particle Swarm Optimization, and Simulated Annealing, Singh has investigated methods to minimize energy states and optimize parameters for quantum systems. This research not only contributes to the theoretical advancement of quantum mechanics but also offers practical implications for optimizing quantum computing processes, enhancing computational power, and improving algorithmic efficiency in real-world applications. His work aims to bridge the gap between classical optimization techniques and their adaptation in quantum systems, fostering the next generation of quantum technologies and quantum machine learning.
- **On biomedical imaging:** Dr. Singh has contributed extensively to biomedical image analysis through a variety of research endeavors aimed at advancing diagnostic techniques and improving healthcare outcomes. His work focuses on the development and application of advanced computational models and algorithms for medical image processing, particularly in the areas of image segmentation, feature extraction, and pattern recognition. Singh has explored innovative methodologies for enhancing image quality, detecting anomalies, and automating the interpretation of medical images such as MRI, CT scans, and X-rays. His research also delves into the integration of machine learning and deep learning techniques to improve the accuracy and efficiency of medical diagnoses. Additionally, Singh has investigated the use of multimodal imaging data for comprehensive disease analysis, including the identification of early biomarkers for various conditions, such as cancer and neurological disorders. His interdisciplinary approach combines engineering, data science, and medical knowledge to push the boundaries of biomedical image analysis

for improved patient care.

Teaching Statement

Teaching is an integral part of my academic identity, and I view the classroom as a space for both intellectual exploration and transformation. As a faculty member in the domain of Data Science, I have strived to blend theoretical foundations with practical applications, ensuring students not only understand the *how* but also the *why* behind every algorithm, method, and model.

Across multiple academic batches, I have taught the following postgraduate-level courses:

- **Foundations of Data Science** – *Semester II, Batch 2021–23*
  Introduced core concepts such as data preprocessing, visualization, feature engineering, and fundamental inferential techniques. Emphasis was placed on reproducibility and ethical data handling, preparing students for subsequent advanced courses.
- **Machine Learning (MBD 410)** – *Semester II, Batches 2021–23 and 2022–24*
  Built both intuition and implementation skills. Modules included real-world datasets, ensemble methods, and cross-validation techniques using `scikit-learn`.
- **Time Series & Forecasting (MBD 531)** – *Semester III, Batch 2021–23*
  Explored autoregressive models, exponential smoothing, and hybrid forecasting methods. Students applied models to real-world data such as sunspot numbers and economic indicators using MATLAB and Python.
- **Linear Algebra & Matrix Theory (MBD 403)** – *Semester I, Batch 2022–24*
  Focused on matrix operations, eigen decomposition, and linear transformations with applications in PCA and dimensionality reduction.
- **Statistical Methods (MBD 401)** – *Semester I, Batch 2022–24*
  Covered probability distributions, hypothesis testing, and regression modeling through simulation-based learning in R and Python.
- **Database Management System (MBD 402)** – *Semester I, Batch 2023–24*
  Delivered comprehensive instruction on relational database theory, SQL, normalization, and transaction management, linking database design with data-driven applications.
- **Introduction to Econometrics and Finance (MBD 410)** – *Semester II, Batch 2023–24*
  Introduced core econometric techniques including OLS, time series regression, and panel data models, with a focus on financial data analysis and model interpretation.
- **Software Engineering (MBD 534)** – *Semester III, Batch 2023–24*
  Covered software development life cycle models, requirements engineering, design principles, and agile methodologies, fostering team-based project work.

My teaching philosophy is rooted in the belief that rigorous conceptual training combined with hands-on practice empowers students to become critical thinkers and innovative

problem-solvers. I incorporate interactive coding sessions, flipped classroom strategies, peer learning, and project-based assessments.

I am particularly committed to bridging theoretical depth with real-world application, ensuring students grasp the mathematical foundations while becoming competent in implementation. Student feedback often highlights my clarity, patience, and ability to simplify complex topics.

Ultimately, I aim to cultivate curiosity, confidence, and capability in every learner—nurturing not only their academic success but also their long-term growth as data science professionals and researchers.

Patents/Copyrights

PAT 1-2019: P. Singh and G. Dhiman. Development of Tool and Technique for High-Resolution Satellite Image Data Compression using Fuzzy Set Theory. *Indian Copyright Reg. No. 12105/2019*

Books

BK 1-2025: P. Singh. A Journey into Quantum Wavefunction Optimization Algorithm: Exploring the Path to the Optimal Solution. Publisher: Cambridge University Press, UK, ISBN: 1-0364-5498-3, Year: 2025.

BK 2-2025: P. Singh. A Journey into Ambiguous Set Theory: Exploring Ambiguity. Publisher: Cambridge University Press, UK, ISBN: 1-0364-4111-3, Year: 2025.

BK 3-2024: P. Singh. Biomedical Image Analysis: Special Applications in MRIs and CT Scans. Publisher: Springer International Publishing, ISBN: 978-981-99-9938-5, Year: 2024.

BK 4-2015: P. Singh. Applications of Soft Computing in Time Series Forecasting: Simulation and Modeling Techniques. Publisher: Springer, Heidelberg (Germany), ISBN: 978-3-319-26292-5, 2015.

Journal Publications (SCI)

SCI 1-2026: P. Singh, Enhancing Cryptocurrency Investment Decision-Making Through Ambiguous Sets and Multi-Criteria Group Decision-Making. *International Journal of Uncertainty, Fuzziness and Knowledge-Based Systems (World Scientific)*, 34 (1), 91–116, 2026. [IF = 1.00 (2024)]

SCI 2-2025: P. Singh, A novel model to deal with ambiguous and complex time series: Application to sunspots forecasting. *Knowledge-Based Systems (Elsevier)*, 329, 114257, 2025. [IF = 7.6 (2024)]

SCI 3-2025: P. Singh, The Fast Forward Quantum Optimization Algorithm: A study of convergence and novel unconstrained optimization. *Computer Methods in Applied Mechanics and Engineering (Elsevier)*, 443, 118039, 2025. [IF = 6.9 (2024)]

SCI 4-2025: P. Singh, Quantum Wavefunction Optimization Algorithm: Application in Solving Traveling Salesman Problem. *International Journal of Machine Learning and Cybernetics (Springer)*, 16, 3557–3585, 2025. [IF = 3.1 (2023)]

SCI 5-2024: M. K. Muchahari, **P. Singh** and S. Das, Automated white matter lesions segmentation of MRIs for multiple sclerosis detection using fuzzy-entropy algorithm. *International Journal of Fuzzy Systems (Springer)*, 27, 1875–1886, 2025. [IF = 4.085 (2021)]

SCI 6-2025: P. Singh, Bhavna Saini, and Y.-P. Huang, AECA: An ambiguous-entropy clustering algorithm for the analysis of resting-state fMRISs of human brain and their functional connections. *Modern Physics Letters B (World Scientific)*, 39 (18), 2550023, 2024. [IF = 1.9 (2022)]

SCI 7-2024: P. Singh and Y.-P. Huang, AKDC: Ambiguous Kernel Distance Clustering Algorithm for COVID-19 CT Scans Analysis. *IEEE Transactions on Systems, Man and Cybernetics: Systems (IEEE)*, 54 (10), 6218–6229, 2024. [IF = 8.7 (2022)]

SCI 8-2024: P. Singh, From Ambiguous Sets to Single-Valued Ambiguous Complex Numbers: Applications in Mandelbrot Set Generation and Vector Directions. *Modern Physics Letters B (World Scientific)*, 39 (14), 2450509, 2024. [IF = 1.9 (2022)]

SCI 9-2024: P. Singh and Y.-P. Huang, An ambiguous edge detection method for computed tomography scans of coronavirus disease 2019 cases. *IEEE Transactions on Systems, Man and Cybernetics: Systems (IEEE)*, 54 (1), 352–364, 2024. [IF = 8.7 (2022)]

SCI 10-2023: P. Singh and Y.-P. Huang, A four-valued ambiguous logic: Application in designing ambiguous inference system for control systems. *International Journal of Fuzzy Systems (Springer)*, DOI: 10.1007/s40815-023-01582-2, 2023. [IF = 4.085 (2021)]

SCI 11-2023: P. Singh and Y.-P. Huang, Membership functions, set-theoretic operations, distance measurement methods based on ambiguous set theory: A solution to a decision-making problem in selecting the appropriate colleges. *International Journal of Fuzzy Systems (Springer)*, 25, 1311–1326, 2023. [IF = 4.085 (2021)]

SCI 12-2023: P. Singh and M. K. Muchahari, Solving multi-objective optimization problem of convolutional neural network using fast forward quantum optimization algorithm: Application in digital image classification. *Advances in Engineering Software (Elsevier)*, 176, 103370, 2023. [IF = 4.255 (2021)]

SCI 13-2022: P. Singh, Marcin Wątorek, Anna Ceglarek, Magdalena Fąfrowicz, Koryna Lewandowska, Tadeusz Marek, Barbara Sikora-Wachowicz and Paweł Oświęcimka, Analysis of fMRI signals from working memory tasks and resting-state of brain: Neutrosophic-Entropy based clustering algorithm. *International Journal of Neural Systems (World Scientific)*, 32(4), 2250012, 2022. [IF = 6.325 (2020)]

SCI 14-2021: P. Singh and S. S. Bose, Ambiguous D-means fusion clustering algorithm based on ambiguous set theory: Special application in clustering of CT scan images of COVID-19. *Knowledge-Based Systems (Elsevier)*, 231, 107432, 2021. [IF = 8.038 (2020)]

SCI 15-2021: P. Singh and S. S. Bose, A Quantum-Clustering Optimization Method for COVID-19 CT Scan Image Segmentation. *Expert Systems With Applications (Elsevier)*, 185, 115637, 2021. [IF = 6.954 (2020)]

SCI 16-2021: P. Singh, FQTSFM: A fuzzy-quantum time series forecasting model. *Information Sciences (Elsevier)*, 556, 57–79, 2021. [IF = 6.795 (2020)]

SCI 17-2021: P. Singh, A Type-2 Neutrosophic-Entropy-Fusion Based Multiple Thresholding Method for the Brain Tumor Tissue Structures Segmentation. *Applied Soft Computing (Elsevier)*, 103, 107119, 2021. [IF = 6.725 (2020)]

SCI 18-2020: P. Singh and Y-P Huang. A Four-Way Decision-Making Approach using Interval-Valued Fuzzy Sets, Rough Set and Granular Computing: A New Approach in Data Classification and Decision-Making. *Granular Computing (Springer)*, 5, 397–409, 2020.[IF = 5.5 (2022)]

SCI 19-2020: Y.-P. Huang, **P. Singh**, Wen-Lin Kuo and Hung-Chi Chu. A Type-2 Fuzzy Clustering and Quantum Optimization Approach for Crops Image Segmentation. *International Journal of Fuzzy Systems (Springer)*, 23, 615–629, 2020. [IF = 4.406 (2019)]

SCI 20-2020: P. Singh. A neutrosophic-entropy based adaptive thresholding segmentation algorithm (NEATSA): A special application in MR images of Parkinson's disease (PD). *Artificial Intelligence in Medicine (Elsevier)*, 104, 101838, 2020. [IF = 3.574 (2018)]

SCI 21-2020: P. Singh, Y.-P. Huang and Shu-I Wu. An Intuitionistic Fuzzy Set Approach for Multi-Attribute Information Classification and Decision-Making. *International Journal of Fuzzy Systems (Springer)*, 22(5), 1506–1520, 2020. [IF = 4.406 (2019)]

SCI 22-2020: Y.-P. Huang, **P. Singh** and Hung-Chou Kuo. A hybrid fuzzy clustering approach for the recognition and visualization of MRI images of Parkinson's disease. *IEEE ACCESS (IEEE)*, 8(1), 25041–25051, 2020. [IF = 4.098 (2018)]

SCI 23-2020: P. Singh. A Novel Hybrid Time Series Forecasting Model Based on Neutrosophic-PSO Approach. *International Journal of Machine Learning and Cybernetics (Springer)*, 11, 1643–1658, 2020. [IF = 3.844 (2018)]

SCI 24-2020: P. Singh. A neutrosophic-entropy based clustering algorithm (NEBCA) with HSV color system: Application in segmentation and visualization of Parkinson's disease (PD) MR images. *Computer Methods and Programs in Biomedicine (Elsevier)*, 189, 105317, 2020. [IF = 3.424 (2018)]

SCI 25-2019: P. Singh and Y.-P. Huang. A High-Order Neutrosophic-Neuro-Gradient Descent Algorithm Based Expert System for Time Series Forecasting. *International Journal of Fuzzy System (Springer)*, 21(7), 2245–2257, 2019. [IF = 4.406 (2019)]

SCI 26-2019: P. Singh and Y.-P. Huang. A New Hybrid Time Series Forecasting Model Based on the Neutrosophic Set and Quantum Optimization. *Computers in Industry (Elsevier)*, 111, 121–139, 2019. [IF = 4.769 (2018)]

SCI 27-2019: P. Singh, G. Dhiman, S. Guo, R. Maini, H. Kaur, A. Kaur, H. Kaur, J. Singh and N. Singh. A hybrid fuzzy quantum time series and linear programming

model: Special application on TAIEX index dataset. *Modern Physics Letters A (World Scientific)*, 34(25), 1950201, 2019. [IF = 1.367 (2018)]

SCI 28-2019: G. Dhiman, **P. Singh**, H. Kaur and R. Maini. DHIMAN: A Novel Algorithm for Economic Dispatch Problem based on Optimization Method using Monte-Carlo Simulation and Astrophysics Concepts. *Modern Physics Letters A (World Scientific)*, 34(4), 1950032–1950046, 2019. [IF = 1.308 (2017)]

SCI 29-2018: P. Singh, G. Dhiman and A. Kaur. A Quantum Approach for Time Series Data Forecasting Based on Graph and Schrödinger Equations Methods. *Modern Physics Letters A (World Scientific)*, 33(35), 1850208–1850231, 2018. [IF = 1.308 (2017)]

SCI 30-2018: P. Singh and G. Dhiman. Uncertainty Representation using Fuzzy-Entropy Approach: Special Application in Remotely Sensed High-Resolution Satellite Images (RSHRSIs). *Applied Soft Computing (Elsevier)*, 72, 121–139, 2018. [IF = 3.541 (2018)]

SCI 31-2018: P. Singh, K. Rabadiya and G. Dhiman. Four-Way Decision-Making System for the Indian Summer Monsoon Rainfall. *Modern Physics Letters B (World Scientific)*, 32(25), 1850304–1850326, 2018. [IF = 0.687 (2017)]

SCI 32-2018: P. Singh and G. Dhiman. A hybrid fuzzy time series forecasting model based on granular computing and bio-inspired optimization approaches. *Journal of Computational Science (Elsevier)*, 27, 370–385, 2018. [IF = 1.748 (2018)]

SCI 33-2017: P. Singh. Indian Summer Monsoon Rainfall (ISMR) Forecasting using Time Series Data: A Fuzzy-Entropy-Neuro Based Expert System. *Geoscience Frontiers (Elsevier)*, 9, 1243–1257, 2017. [IF = 4.256 (2017)]

SCI 34-2016: P. Singh. High-order fuzzy-neuro-entropy integration based expert system for time series forecasting. *International Journal of Neural Computing and Applications (Springer)*, 28(12), 3851–3868, 2016. [IF = 1.569 (2014)]

SCI 35-2016: P. Singh. Rainfall and Financial Forecasting using Fuzzy Time Series and Neural Networks Based Model. *International Journal of Machine Learning and Cybernetics (Springer)*, 9(3), 491–506, 2016. [IF = 1.11 (2015)]

SCI 36-2015: P. Singh. A brief review of modeling approaches based on fuzzy time series. *International Journal of Machine Learning and Cybernetics (Springer)*, 8(2), 397–420, 2015. [IF = 1.11 (2015)]

SCI 37-2014: P. Singh and B. Borah. Forecasting stock index price based on M-factors fuzzy time series and particle swarm optimization. *International Journal of Approximate Reasoning (Elsevier)*, 55, 812–833, 2014. [IF = 1.729 (2013)]

SCI 38-2013: P. Singh and B. Borah. High-order fuzzy-neuro expert system for daily temperature forecasting. *Knowledge-Based Systems (Elsevier)*, 46, 12–21, 2013. [IF = 4.104 (2013)]

SCI 39-2013: P. Singh and B. Borah. An efficient time series forecasting model based on fuzzy time series. *Engineering Applications of Artificial Intelligence (Elsevier)*, 26, 2443–2457, 2013. [IF = 1.625 (2013)]

SCI 40-2013: P. Singh and B. Borah. Indian summer monsoon rainfall prediction using artificial neural network. *Stochastic Environmental Research and Risk Assessment (Springer)*, 27(7), 1585–1599, 2013. [IF = 1.961(2013)]

SCI 41-2012: P. Singh and B. Borah. An effective neural network and fuzzy time series-based hybridized model to handle forecasting problems of two factors. *Knowledge and Information Systems (Springer)*, 38(3), 669–690, 2012. [IF = 2.225(2012)]

Journal Publications (Non-SCI)

Scopus 1-2025: S. U. Maitoro, M. A. Mohd Safari, F. Z. Che Rose, **P. Singh**, and J. Arasan, Forecasting Higher-Order Fuzzy Time Series Using an Improved FCMeans Method. *Jour. of Adv. Res. Design (AKADEMIA BARU PUBLISHING)*, 135 (1), 297–307, 2025.

Scopus 2-2025: S. U. Maitoro, M. A. Mohd Safari, F. Z. Che Rose, **P. Singh**, and J. Arasan. An Adaptive Higher-Order Fuzzy Time Series Forecasting Model Using a Variance-Based Modified Re-Partition Discretization Method. *Journal of Advanced Research in Applied Sciences and Engineering Technology (SEMARAK ILMU PUBLISHING)*, 54 (2), 388–397, 2025.

Scopus 3-2025: S. U. Maitoro, M. A. Mohd Safari, F. Z. Che Rose, **P. Singh**, and J. Arasan. Forecasting Bitcoin Price Volatility: A Comparative Analysis of Fuzzy Time Series, ARIMA, and GARCH Models for Short-Term and Long-Term Predictions, *Journal of Advanced Research in Computing and Applications (KARYA ILHAM PUBLISHING)*, 41 (1), 144–153, 2025.

Scopus 4-2025: P. Singh and T.W. Liao, Multi-criteria group decision-making using ambiguous sets, Weibull distribution, and aggregation operators: A case study in optimal vendor selection for office supplies. *Systems and Soft Computing (Elsevier)*, 7, 200283, 2025.

Scopus 5-2025: P. Singh, Data-Driven Ambiguous Cognitive Map for Complex Decision-Making in Supply Chain Management. *Journal of Computational Mathematics and Data Science (Elsevier)*, 14, 100110, 2025.

Scopus 6-2023: P. Singh, An investigation of ambiguous sets and their application to decision-making from partial order to lattice ambiguous sets. *Decision Analytics Journal (Elsevier)*, 08, 100286, 2023.

Scopus 7-2023: P. Singh, A general model of ambiguous sets to a single-valued ambiguous numbers with aggregation operators. *Decision Analytics Journal (Elsevier)*, 08, 100260, 2023.

Scopus 8-2023: P. Singh, Ambiguous set theory: A new approach to deal with unconsciousness and ambiguousness of human perception. *Journal of Neutrosophic and Fuzzy Systems (American Scientific Publishing Group)*, 05(01), 52–58, 2023.

Scopus 9-2022: P. Singh, Marcin Wątorek, Anna Ceglarek, Magdalena Fąfrowicz, and Paweł Oświęcimka, Analysis of fMRI Time Series: Neutrosophic-Entropy Based Clustering Algorithm. *Journal of Advances in Information Technology*, 13(3), 224–229, 2022.

Book Chapters

BC 1-2017: P. Singh. Emerging Research on Applied Fuzzy Sets and Intuitionistic Fuzzy Matrices, chapter *An Efficient Method for Forecasting using Fuzzy Time Series*, pp.287–304, IGI Global (USA), 2017.

BC 2-2015: P. Singh. Computational Intelligence for Big Data Analysis, volume 19, chapter *Big Data Time Series Forecasting Model: A Fuzzy-Neuro Hybridize Approach*, pp.55–71, Springer-Verlag/Heidelberg, 2015.

BC 3-2015: P. Singh. Hybrid Soft Computing Approaches: Research and Applications, chapter *Neuro-Fuzzy Hybridized Model for Seasonal Rainfall Forecasting: A Case Study in Stock Index Forecasting*, pp.361–385, Springer-Verlag/Heidelberg, 2015.

International Conferences

IC 1-2024: P. Singh. Ambiguous sets and various distance measurements. *Proc. of 6th International Conference on Soft Computing and its Engineering Applications (icSoftComp2024)*, Bangkok, Thailand, 2430, pp. 121–131, May 2025.

IC 2-2021: P. Singh, M. Wątorek, A. Ceglarek, M. Fąfrowicz and P. Oświęcimka. Analysis of fMRI Time Series: Neutrosophic-Entropy based Clustering Algorithm. *Proc. of 8th Intl. Conference on Soft Computing and Machine Intelligence (ISCMI 2021)*, Cairo, Egypt, pp. XX–XX, Nov. 26–27, 2021.

IC 3-2020: P. Singh, Y.-P. Huang, W.-J. Chu and J.-H. Lee. A Fuzzy-Entropy and Image Fusion Based Multiple Thresholding Method for the Brain Tumor Segmentation. *Proc. of IEEE Int. Conf. on Systems, Man, and Cybernetics (SMC 2020)*, Toronto, Canada, pp. 2446–2451, Oct. 11–14, 2020.

IC 4-2019: P. Singh, Y.-P. Huang and T.-T. Lee. A Novel Ambiguous Set Theory to Represent Uncertainty and its Application to Brain MR Image Segmentation. *Proc. of IEEE Int. Conf. on Systems, Man, and Cybernetics (SMC 2019)*, Bari, Italy, pp.2460–2465, Oct. 06–09, 2019.

IC 5-2019: P. Singh, Y.-P. Huang and T.-T. Lee. A Method for High-Resolution Satellite Image Compression using Type-1 and Type-2 Fuzzy Sets. *Proc. of IEEE Int. Conf. on System and Engineering (ICSSE 2019)*, Dong Hoi City, Quang Binh, Vietnam, pp.103–108, July 19–21, 2019.

IC 6-2018: P. Singh and K. Rabadiya. High-Resolution Satellite Image Compression using Uncertain Color Space Based Method. *Proc. of 24th Annual Int. Conf. on Advanced Computing and Communications (ADCOM 2018)*, International Institute of Information Technology (IIIT), Bangalore, pp.XX, Sep. 21–23, 2018.

IC 7-2018: P. Singh and K. Rabadiya. Information Classification, Visualization and Decision-Making: A Neutrosophic Set Theory Based Approach. *Proc. of 2018 IEEE Int. Conf. on Systems, Man, and Cybernetics (SMC 2018)*, Miyazaki, Japan, pp.409–414, Oct. 7–11, 2018.

IC 8-2017: P. Singh and K. Rabadiya. Uncertain Information Classification: A Four-Way Decision Making Approach. *Proc. of 9th Int. Conf. on Advances in Pattern Recognition (ICAPR)*, ISI, Bengluru, India, pp.1–9, Dec. 27–30, 2017. [Acceptance Rate: 33%]

IC 9-2017: P. Singh and G. Dhiman. A Fuzzy-LP Approach in Time Series Forecasting. *Proc. of 7th Int. Conf. on Pattern Recognition and Machine Intelligence (PReMI 2017)*, ISI Kolkata, India, pp.243–253, Dec. 5–8, 2017. [Acceptance Rate: 33%]

IC 10-2012: P. Singh and B. Borah. Prediction of all India summer monsoon rainfall using an artificial neural network. *Proc. of Opportunities and Challenges in Monsoon Prediction in a Changing Climate (OCHAMP' 2012)*, IITM, Pune, India, Feb. 21–25, 2012.

National Conferences

NC 1-2011: P. Singh and B. Borah. An Efficient Method For Forecasting Using Fuzzy Time Series. *NCTMI' 11*, Tezpur University, Assam, India, pp.67–75, 2011.

NC 2-2011: P. Singh and B. Borah. A Multi-Purpose Forecasting Model Based On Fuzzy Time-Series. *IDRBT Colloquium, IDRBT*, Hyderabad, India, 2011.

Funding Research

1. Title of the Project: Simulation and Modeling of Big Data Time Series
   - Funding Date: Feb. 13, 2017
   - Funding Agency: Department of Science and Technology (SERB), Govt. of India
   - Amount (in Lac): 23.78 (US $35,000 approx.)
   - Duration: 4 Years
   - Role: Principal Investigator
   - Status: Closing on dated Feb. 13, 2019

Academic Achievements

AA 1-2020: Recipient of Visiting Research Adjunct Professor Fellowship from the Foundation for Polish Science, Poland for pursuing research in **Institute of Theoretical Physics, Jagiellonian University (Nov. 16, 20–March 31, 2022)**

AA 2-2019: Recipient of financial assistance from the **National Taipei University of Technology, Taiwan**, for participating in **IEEE ICSSE 2019–IEEE International Conference on System and Engineering, Vietnam (July 19–21, 2019)**

AA 3-2019: Recipient of financial assistance from the **Taiwan Association of Systems Science and Engineering (TASSE), Taiwan**, for participating in **IEEE ICSSE 2019–IEEE International Conference on System and Engineering, Vietnam (July 19–21, 2019)**

AA 4-2018: Recipient of Postdoctoral Research Fellowship from the Ministry of Science and Technology (MOST), Taiwan for pursuing research in **Department of Electrical Engineering, National Taipei University of Technology, under Grant No.: MOST 108-2811-E-027-500 (Mar. 01, 2019–Sep. 31, 2020)**

AA 5-2018: Recipient of financial assistance from the DST-SERB, Govt. of India, for participating in **IEEE SMC 2018–IEEE International Conference on Systems, Man and Cybernetics, Japan (Oct. 07–10, 2018)**

AA 6-2010: Qualified **Graduate Aptitude Test in Engineering**, held on Feb. 10, 2010, conducted by Indian Institute of Technology (IIT), India

AA 7-2010: Recipient of **Rajiv Gandhi National Fellowship Award** in 2010 from University Grant Commission (UGC), India, for pursuing full-time Ph.D. in Computer Science and Engineering

Best Research Paper Award

BP 1-2019: P. Singh, Y.-P. Huang and T.-T. Lee. A Method for High-Resolution Satellite Image Compression using Type-1 and Type-2 Fuzzy Sets. *Proc. of IEEE Int. Conf. on System and Engineering (ICSSE 2019)*, Dong Hoi City, Quang Binh, Vietnam, pp.103–108, July 19–21, 2019.

Travel History

- Japan (Oct. 7–10, 2018) to participate in **IEEE Int. Conf. on Systems, Man and Cybernetics (SMC 2018)**
- Taiwan (Feb. 27, 2019 to till date) to join as a Postdoctoral research fellow in **National Taipei University of Technology, Taipei, Taiwan**
- Vietnam (July 17–23, 2019) to participate in **IEEE Int. Conf. on System and Engineering**

Faculty Induction/Orientation Programme

- Faculty Induction/Orientation Programme (April 23–May 22, 2023): Organized by Ramanujan College, University of Delhi, India. Duration: 01 Month
- Faculty Development Programme (May 29–June 04, 2023): Organized by Ramanujan College, University of Delhi, India. Duration: 01 Week

Participate in Workshops

- PKI Outreach Programme (Aug. 27, 2009): Organized by C-DAC, Bangalore, in the Department of Computer Science & Engineering, Tezpur University, Assam (India)
- Network Security (June 9–10, 2010): Organized by the Department of Computer Science & Engineering, Tezpur University, Assam (India)
- Soft Computing (Dec. 20–23, 2010): Organized by ISI, Kolkata (India), in the Department of Computer Science & Engineering, Tezpur University, Assam (India)
- Faculty Development/Teacher's Training Program (July 15–26, 2013): Organized by NITTR, Chandigarh, Punjab (India)
- Attended Faculty Development/ Teacher's Training Program (Nov. 13–22, 2017): Organized by CHARUSAT, CHARUSAT Campus, Anand-388421, Gujarat (India) on Multiple Strategies for Creativity, Problem Solving and Innovation
- 23rd Innovation Conference on Innovation & Change Management (Feb. 17, 2018): Organized by Ahmedabad Management Association (AMA), in Ahmedabad Management Association, Ahmedabad (India)

Invited Speaker/Resource Person

RP 1-2025: Resource Person (May 27, 2025): Refresher Course in Electronics and Communication (Multidisciplinary) on the theme **AI Solutions for a Sustainable and Inclusive Future** organized by UGC Malaviya Mission Teacher Training Centre, North-Eastern Hill University, Shillong

RP 2-2025: Resource Person (May 29, 2025): Refresher Course in Electronics and Communication (Multidisciplinary) on the theme **AI Solutions for a Sustainable and Inclusive Future** organized by UGC Malaviya Mission Teacher Training Centre, North-Eastern Hill University, Shillong

RP 3-2024: Resource Person (Sept. 27, 2024): 2024 National Workshop on **Crisp and Fuzzy Time Series Forecasting using Deep Learning Techniques** sponsored by Science and Engineering Research Board (SERB), Department of Computer Science and Engineering, NIT Rourkela, India

RP 4-2024: Resource Person (July 16-22, 2024): 2024 One Week International e-FDP on **Technological Trends for Sustainability**, Symbiosis Institute of Computer Studies and Research, Pune, Maharashtra, India

RP 5-2023: Resource Person (June 05, 2023): 2023 National seminar on **Perspectives of Data Science**, Division of Mathematics, School of Advanced Sciences, Vellore Institute of Technology, Chennai, India

RP 6-2023: Invited Talk (May 17-18, 2023): 2023 Int. Conf. on **Challenges and Opportunities Science, Engineering and Technology for Societal Development (INCOSETSD-2023)**, Jayoti Vidyapeeth Women's University, Jaipur, Rajasthan, India

RP 7-2023: Invited Talk (Mar. 24, 2023): Topic on **Ambiguous D-Means Fusion Clustering Algorithm Based on Ambiguous Set Theory: Special Application in Clustering of CT Scan Image of COVID-19**, COER University, Roorkee, Uttarakhand, India

RP 8-2023: Resource Person (Feb. 24–25, 2023): 2023 Int. Conf. on **Statistics and Data Science (SDS2023)**, Sadguru Gadage Maharaj College, Karad, Maharashtra, India

RP 9-2021: Invited Speaker (Dec. 01–03, 2021): 2021 Int. Conf. on **Medical Imaging Science and Technology (MIST2021)**, China

RP 10-2021: Resource Person (Nov. 08–13, 2021): One week online STTP on **Recent Advancement in AI and Machine Learning**, Kaziranga University, Jorhat, Assam, India

RP 11-2020: Invited Speaker (Dec. 11–12, 2020): 2nd Int. Conf. on **Soft Computing and its Engineering Applications (icSoftComp2020)**, CHARUSAT Campus, Anand, Gujarat, India

Contributions to Seminars/Conferences

CC 1-2023: Technical Program Committee (Dec. 07–09, 2023): 5th Int. Conf. on **Soft Computing and its Engineering Applications (icSoftComp2023)**, Smt. Chandaben Mohanbhai Patel Institute of Computer Applications, Charotar University of Science and Technology (CHARUSAT), Changa, India

CC 2-2023: Organizing Committee Member (Feb. 08–10, 2023): Int. Conf. on **Disability and the Everyday: Interdisciplinary Perspectives (CURaj-IDSC 2023)**, Department of English, School of Humanities and Languages, Central University of Rajasthan, Ajmer, India

CC 3-2023: International Program Committee (Apr. 23–24, 2023): 7th Int. Conf. on **Intelligent Systems, Metaheuristics and Swarm Intelligence (ISMSI 2023)**, Kuala Lumpur, Malaysia

CC 4-2022: International Program Committee (Apr. 09–10, 2022): 6th Int. Conf. on **Intelligent Systems, Metaheuristics and Swarm Intelligence (ISMSI 2022)**, Seoul, Republic of Korea

CC 5-2021: International Program Committee (Dec. 11–12, 2021): 3rd Int. Conf. on **Soft Computing and its Engineering Applications (icSoftComp2021)**, CHARUSAT Campus, Anand, Gujarat, India

CC 6-2021: International Program Committee (Nov. 26–27, 2021): 8th Int. Conf. on **Soft Computing and Machine Intelligence (ISCMI 2021)**, Cairo, Egypt

CC 7-2020: International Program Committee (Dec. 11–12, 2020): 2nd Int. Conf. on **Soft Computing and its Engineering Applications (icSoftComp2020)**, CHARUSAT Campus, Anand, Gujarat, India

CC 8-2019: Program Chairman (July 19–21, 2019): IEEE Int. Conf. on **System and Engineering (ICSSE 2019)**, Dong Hoi City, Quang Binh, Vietnam

CC 9-2017: Program Co-Chairs (Dec. 1–2, 2017): 1st Int. Conf. on **Soft Computing and its Engineering Applications (icSoftComp2017)**, CHARUSAT Campus, Anand, Gujarat, India

Personal Information

- **Nationality:** Indian
- **Gender:** Male
- **Date of Birth:** 18-Feb-1982
- **Place of Birth:** Tinsukia, Assam (India)
- **Home Address:** H.No.: 3, Hari Krupalu Ishwar Residency, Near Sarkari Davakhana, Railway Station Road, Karamsad-388325, Anand, Gujarat (India)
- **Marital Status:** Married to Mrs. Manjit Kour (Date of Birth: 28-Feb-1982)
- **No. of Children & DOB:** One Child (Mr. Simarpreet Singh (Date of Birth: 27-Sep-2014))
- **Hobby:** Reading Books, Cooking, Watching Movies & Travelling
- **Strength:** Punctual, Good Learning Ethics & Hard Working
- **Language Known:** Hindi (Advanced proficiency) & English (Advanced proficiency)

References

- Dr. Yo-Ping Huang, Professor, Department of Electrical Engineering, National Taipei University of Technology, Taipei, Taiwan 10608.
  E-mail: yphuang@ntut.edu.tw
- Dr. Bhogeswar Borah, Professor, Department of Computer Science & Engineering, Tezpur University, Napaam, Tezpur, Assam-784028, India.
  E-mail: bgb@tezu.ernet.in