Dr. Kranti Kumar
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https://orcid.org/0000-0002-6361-8786

Academic Qualification: M.Sc., PhD (Mathematics) from IIT Roorkee, Roorkee

Research Interests: Noise pollution modeling, Traffic flow modeling, Differential equations, Artificial Neural Network and Deep Learning

Employment History:

Teaching and Research Experience: 9 years 8 months

1. Assistant Professor, Dr. B. R. Ambedkar University Delhi, Delhi from 21 July, 2014-16 February 2023.
2. Assistant Professor, Fluid Dynamics Division, School of Advanced Sciences (SAS), Vellore Institute of Technology (VIT) University, Vellore, Tamilnadu-632014, India from 01 July 2013 to July 2014.

Personal Distinctions:

1. Qualified Graduate Aptitude Test in Engineering (GATE) in Mathematics in the year 2008.
2. Qualified CSIR-JRF in Mathematical Science, conducted by Council of Scientific and Industrial Research (CSIR), New Delhi, in June- 2008.
3. Shortlisted for Shyama Prasad Mukherjee (SPM) fellowship final stage competition based on CSIR-NET results for the year 2008.
4. Got third place in online quiz organized by Elsevier at IIT Roorkee in March- 2012.
5. “Good Researcher Award” given by Ambedkar University Delhi, Delhi on 02 November 2022.

Invited Seminars and Invited Conference Presentations:

1 Delivered an invited lecture in the International Conference on Mathematical Sciences (ICMS-2015) held at Sri Venkateswara University, Tirupati, during 13-15 July 2015.
2 Delivered an invited lecture in TEQIP-II Sponsored Faculty Development Programme at Delhi Technological University, Delhi (July 2015).
3 Chaired the special session on "Cloud Computing and Computer Technology" in the International Conference on Communication and Computing Systems (ICCCS 2016) held at Dronacharya College of Engineering Gurgaon during September 9-11, 2016.
4 Delivered an invited lecture in National Webinar on "Online teaching/learning: Challenges and Opportunities" held at Govt. Degree College Pihani, Hardoi, Uttar Pradesh, on 18/05/2020.
5 Delivered two online expert lectures in the AICTE Training and Learning (ATAL) sponsored one-week online FDP held during 06 December 2021-10 December 2021 organized by the School of Computing Science and Engineering, Galgotias University, Uttar Pradesh.
6 Presented an article entitled "Study on the effects of traffic noise on human health" in Inter-Noise Congress 2019, held at Madrid, Spain during 16-19 June, 2019.
7 Presented an article entitled "Survey on road traffic-flow prediction: Recent trends in India" in the 4th International Conference (Online) on Recent Trends in Communication and Electronics held at KIET Group of Institutions, Ghaziabad during 28-29 November, 2020.

Professional Contributions:

1. Life member of **Indian Society of Biomechanics**, Registration Number: N-258.
2. Life member of **Trinity Mathematical Society**, Registration Number: A-453.
3. Life member of **Indian Society of Theoretical and Applied Mathematics**, Registration Number: L/870.
4. Life member of **Acoustical Society of India**, Registration Number: LM-958.
5. Life member of **Transportation Research Group of India**, Registration Number: 20129
6. Life member of **Indian Mathematical Society**, Registration Number: L/2020/189
7. Reviewer for the journals: Acoustics Australia (Springer), International Journal of Environmental Science and Technology (Springer), International Journal of Automation and Computing (Springer), IEEE Transactions on Systems, Man and Cybernetics: Systems (IEEE), IEEE Transactions on Intelligent Transportation Systems (IEEE), Journal of Intelligent Transportation Systems: Technology, Planning, and Operations (Taylor and Francis) and Journal of Traffic and Transportation Engineering (Elsevier), WIREs Data Mining and Knowledge Discovery (Wiley), Physica A: Statistical Mechanics and its Applications (Elsevier)

Teaching/Courses Taught:

(I) Undergraduate level

Quantitative Methods, Probability and Statistics, Analysis I, Analysis III, Algebra III, Ordinary Differential Equations, Mathematical Modelling, Partial Differential Equations, Discrete Mathematics, Computational Methods, Linear Algebra

(II) Post Graduate level

Differential and Integral Equations, Numerical Analysis, Applied Engineering Mathematics

Doctoral/MPhil Thesis Supervision:

PhD: Ongoing: 04, Submitted: 0, Awarded: 0
MPhil: Ongoing: 00, Submitted: 00, Awarded: 02

University Administrative Experience:

1. Worked as Acting Resident Warden of Govind Bhawan (Hostel), Indian Institute of Technology Roorkee during 2010-2011.
2. Programme Coordinator of BA Maths (Hons.) at Ambedkar University Delhi, from August 2017-August 2019.
3. Programme Coordinator of PhD Mathematics at Ambedkar University Delhi, from 12 November 2022-16 February 2023.

Research Projects:

Completed:

1 Seed Money Grant for Faculty Research (SMGFR) project entitled "Study on the effects of traffic noise on human health" awarded by Ambedkar University Delhi in December 2017.
Duration: Eight months (From 08/12/2017-07/08/2018)
Amount: Rs. 100000/-

2 UGC BSR Start up Grant research Project entitled "Modeling and simulation of vehicular traffic flow problems".
Duration: Three years (From January 02, 2019-January 01, 2022)
Amount: Rs. 600000/-

Publications:

Research Articles in Journals

1. Kranti Kumar, V. K. Katiyar, M. Parida, K. Rawat, “Mathematical modeling of road traffic noise prediction”, International Journal of Applied Mathematics and Mechanics (IJAMM), 7 (4), 21-28, 2011.
2. Kranti Kumar, M. Parida, V. K. Katiyar, “Road Traffic Noise Prediction with Neural Networks- A Review”, An International Journal of Optimization and Control: Theories and Applications (IJOCTA), 2(1), 29-37, 2012.
3. Kranti Kumar, M. Parida, V. K. Katiyar, “Prediction of urban traffic noise using artificial neural network approach”, Environmental Engineering and Management Journal (EEMJ). 13 (4), 817-826, 2014.
4. Kranti Kumar, M. Parida and V. K. Katiyar, “Optimized Height of Noise Barrier for Non-Urban Highway using Artificial Neural Network”, International Journal of Environmental Science and Technology (IJEST Springer), 11 (3), 719-730, 2014.
5. Kranti Kumar, M. Parida and V. K. Katiyar, “Short term traffic flow prediction in heterogeneous condition using artificial neural network”, Transport (Taylor and Francis), 30(4), 397-405, 2015.
6. R. K. Mishra, , K. Nair, Kranti Kumar, A. Shukla, "Dynamic noise mapping of road traffic in an urban city", Arabian Journal of Geosciences, 14, 122, 2021. https://doi.org/10.1007/s12517-020-06373-9.
7. Nisha Singh, Kranti Kumar, P Goswami, H Jafari. Analytical method to solve the local fractional vehicular traffic flow model. Mathematical Methods in Applied Sciences, 2021;1-19. https://doi.org/10.1002/mma.8027
8. Nisha Singh, Kranti Kumar. A review of bus arrival time prediction using artificial intelligence. WIREs Data Mining and Knowledge Discovery, 2022, https://doi.org/10.1002/widm.1457
9. Jitendra Kumar, Shubhashree Sahu, Puja Bharti, Ashok Kumar, Kranti Kumar, Abhijit Sarkar & Rajni Devi. Relativistic compact stars via a new class of analytical solution for charged isotropic stellar system in general relativity. Indian Journal of Physics, 2022, https://doi.org/10.1007/s12648-022-02445-6
10. Kranti Kumar, Arun Bhartia, Rajeev Kumar Mishra. Monitoring, modeling, and mapping of rail-induced noise at selected stations in megacity Delhi. International Journal of Environmental Science and Technology, 2022, https://doi.org/10.1007/s13762-022-04529-6
11. Saeed Althubiti, Manoj Kumar, Pranay Goswami & Kranti Kumar. Artificial neural network for solving the nonlinear singular fractional differential equations. Applied Mathematics in Science and Engineering, 2023, 31(1), 2187389 https://doi.org/10.1080/27690911.2023.2187389

Research Articles in Conference Proceedings

1. Kranti Kumar, M. Parida, V. K. Katiyar, “Artificial Neural Network Modeling for Road Traffic Noise Prediction” published in the proceedings of third “International Conference

on Computing, Communication and Networking Technology– ICCCNT 2012" held at SNS College of Engineering Coimbatore, Tamilnadu, from 26-28 July, 2012 by IEEE Xplore. https://doi.org/10.1109/ICCCNT.2012.6395944.

2. Kranti Kumar, M. Parida, V. K. Katiyar, "Short term traffic flow prediction for a non urban highway using Artificial Neural Network" published in "Procedia-Social and Behavioral Sciences" by Elsevier through 2nd Conference of Transportation Research Group of India (2nd CTRG) which was held at Agra between 12-15 December, 2013. Volume 104, pp: 755-764. https://doi.org/10.1016/j.sbspro.2013.11.170
3. B. Sharma, V. K. Katiyar, Kranti Kumar, Traffic accident prediction model using Support Vector Machines with Gaussian Kernel, Proceedings of Fifth International Conference on Soft Computing for Problem Solving by Springer, pp 1-10, 2016, DOI: https://doi.org/10.1007/978-981-10-0451-3_1
4. R. K. Mishra, A. Kumar, Kranti Kumar, Application of artificial neural network in traffic noise pollution modeling, Proceedings of the International Conference on Communication and Computing Systems by Taylor and Francis, pp 469-474, 2017, ISBN 978-1-138-02952-1. https://doi.org/10.1201/9781315364094-85
5. Kranti Kumar, Study on the effects of traffic noise on human health. INTER-NOISE and NOISE-CON Congress and Conference Proceedings, 2019, 259 (3), 6783-6794.
6. M. Kumar, Kranti Kumar, P. Das, Study on road traffic congestion: a review, published in "Recent Trends in Communication and Electronics" as a chapter by Taylor & Francis, in June 2021. https://doi.org/10.1201/9781003193838-43.
7. Kranti Kumar, Bharti, Survey on road traffic-flow prediction: Recent trends in India, published in "Recent Trends in Communication and Electronics" as a chapter by Taylor & Francis, in June 2021. https://doi.org/10.1201/9781003193838-42.
8. Nisha, Kranti Kumar. Multi-Branch Traffic Flow Prediction Based on Temporal Speed. In: Devi, L., Asaithambi, G., Arkatkar, S., Verma, A. (eds) Proceedings of the Sixth International Conference of Transportation Research Group of India. CTRG 2021. Lecture Notes in Civil Engineering, vol 272, pp 47-61. Springer, Singapore. https://doi.org/10.1007/978-981-19-3494-0_4
9. Manoj Kumar, Kranti Kumar. Traffic Congestion Prediction Using Categorized Vehicular Speed Data. In: Devi, L., Errampalli, M., Maji, A., Ramadurai, G. (eds) Proceedings of the

Sixth International Conference of Transportation Research Group of India. CTRG 2021. Lecture Notes in Civil Engineering, vol 273, pp 367-384. Springer, Singapore. https://doi.org/10.1007/978-981-19-4204-4_22

10. Kranti Kumar, Bharti. Deep Bi-LSTM Neural Network for Short-Term Traffic Flow Prediction under Heterogeneous Traffic Conditions. In: M. V. L. R. Anjaneyulu, M. Harikrishna, Shriniwas S. Arkatkar, A. Veeraragavan (eds) Proceedings of the CTSEM 2021. Lecture Notes in Civil Engineering, Vol. 261, Recent Advances in Transportation Systems Engineering and Management, Springer, Singapore. https://doi.org/10.1007/978-981-19-2273-2

Conferences/Workshops/Quiz organized:

1 Organized Quiz competition at University Level at Ambedkar University Delhi for UG students in September, 2015.
2 Organized Quiz competition at University Level at Ambedkar University Delhi for UG students in September-October, 2016.
3 Organized Quiz competition at University Level at Ambedkar University Delhi for UG students in October-November, 2018.
4 Organized one day workshop entitled "Effects of Traffic Noise on Human Health" on 26/10/2018 at Ambedkar University Delhi, Kashmere Gate Campus.
5 Jointly organized one day workshop on "GAP (Groups, Algorithms and Programming)" dated 25/02/2019 at Ambedkar University Delhi, Kashmere Gate Campus.
6 Jointly organized one day workshop on "SAGE (System for Algebra Geometry and Experimentation)" dated 08/03/2019 at Ambedkar University Delhi, Kashmere Gate Campus.
7 Organized a national conference on "Algebra, Analysis and Applications-2022" dated August, 5, 2022 at Ambedkar University Delhi, Kashmere Gate Campus.

Declaration:

I hereby declare that all the above information is correct to the best of my knowledge.

Place: CUHP, Shahpur Campus Dr. Kranti Kumar