

CURRICULUM VITAE

Dr. SUMAN DAS

Date of Birth: May 1st, 1993

Place of Birth: Dakshin Dinajpur, W.B., India

Sex: Male

Nationality: Indian

Marital Status: Married

Tel: +91-9804353307/ +917554051566 (Office)

Email: pnksmdas@gmail.com / sumand@manit.ac.in



Academic Qualifications:

2016- 2021:



Ph.D.

Department of Mathematics, Indian Institute of Technology Kharagpur, India

Thesis Title: 'Fuzzy geometry and its application in optimization and rule interpolation'

2013-2015:



M. Sc. [85.9%]

Department of Mathematics, Jadavpur University, Kolkata, West Bengal, India

2010-2013:



B. Sc. [77.83%]

Department of Mathematics, Jadavpur University, Kolkata, West Bengal, India

2008-2010:



Higher Secondary Education [84%]

Balurghat Khadimpur High School, Dakshin Dinajpur, West Bengal, India

2008:



Secondary Education [85.25%]

Kardaha High School, Kardaha, Dakshin Dinajpur, West Bengal, India

Work Experience:

Dec. 2024-Till Date: Assistant Professor,

Maulana Azad National Institute of Technology Bhopal, India

April 2022-Nov 2023: Postdoctoral Research Fellow

School of Computer Science and Engineering, Nanyang Technological University, Singapore

Oct. 2021-March 2022 Assistant Professor

& June 2024-Nov. 2024: Dept. of Mathematics, Manipal Institute of Technology Bengaluru, MAHE, India

Research Domain:

- Safety in Machine Learning
- Out-of-Distribution Detection
- Variational Autoencoder
- Explainable Artificial Intelligent
- Fuzzy Rule Base Interpolation
- Fuzzy Optimization

Current Research:

My latest research work focused on proposing an Interpretable Out-of-Distribution (OOD) detection technique in the context of autonomous vehicles facing adverse weather conditions such as rain, lightness, or darkness. The main objective is to develop a robust OOD detection mechanism capable of identifying data points originating from such challenging meteorological scenarios. By effectively distinguishing OOD data, the autonomous vehicle's perception system can avoid making erroneous decisions based on unreliable information, enhancing safety and performance in adverse weather.

Currently, my study aims to integrate the developed OOD detector with existing object detection systems based on camera, LiDAR, and RADAR sensors. The integration seeks to enhance the object detection algorithms' resilience in adverse weather conditions, enabling more accurate and consistent detection of objects on the road. By combining the capabilities of OOD detection with the strengths of different sensor modalities, the proposed approach aspires to create a comprehensive perception system that can adapt and operate reliably in diverse weather environments, supporting the realization of safer and more efficient autonomous vehicles.

Language Skill:

English, Bengali (Mother Tongue), Hindi

Computer Skill:

Python, MATLAB, Mathematica, LINGO.

Publications:

Journal Paper

1. **Suman Das**, Michael Yuhas, Rachel Koh, and Arvind Easwaran. "Interpretable Latent Space for Meteorological Out-of-Distribution Detection via Weak Supervision." *ACM Transactions on Cyber-Physical Systems* 8, no. 2 (2024): 1-26. **Q2, ESCI, IF=2.0**. [Doi: 10.1145/3651224](https://doi.org/10.1145/3651224)
2. Debjani Chakraborty and **Suman Das**. "Fuzzy geometry: Perpendicular to fuzzy line segment." *Information Sciences* 2018, 468: 213-225. **Q1, SCI, IF=8.1**. [Doi: 10.1016/j.ins.2018.08.040](https://doi.org/10.1016/j.ins.2018.08.040)
3. **Suman Das** and Debjani Chakraborty, 2022. "Conceptualizing fuzzy line as a collection of fuzzy points". *Information Sciences*, 2022, 598, pp.86-100. **Q1, SCI, IF=8.1**. [Doi: 10.1016/j.ins.2022.03.061](https://doi.org/10.1016/j.ins.2022.03.061)
4. Debjani Chakraborty and **Suman Das**. "Introduction to Non-Convex Fuzzy Geometry." *Fuzzy Sets and Systems* 2023, 475: 108758. **Q1, SCI, IF=3.9**. [Doi: 10.1016/j.fss.2023.108758](https://doi.org/10.1016/j.fss.2023.108758)
5. **Suman Das**, Debjani Chakraborty, and László T. Kóczy. "Forward and backward fuzzy rule base interpolation using fuzzy geometry". *Iranian Journal of Fuzzy Systems*, 2023, 20(3), pp.127-146. **Q2, SCI, IF=2.01**. [Doi: 10.22111/IJFS.2023.7643](https://doi.org/10.22111/IJFS.2023.7643)
6. **Suman Das**, Debjani Chakraborty, and László T. Kóczy. "Linear fuzzy rule base interpolation using fuzzy geometry." *International Journal of Approximate Reasoning*, 2019 112: 105-118. **Q1, SCI, IF=3.9**. [Doi: 10.1016/j.ijar.2019.05.004](https://doi.org/10.1016/j.ijar.2019.05.004)
7. Debjani Chakraborty and **Suman Das**. "Modified fuzzy c-mean for custom-sized clusters." *Sādhana*, 2019, 44.8: 1-7. **Q2, SCIE, IF=1.6**. [Doi: 10.1007/s12046-019-1166-1](https://doi.org/10.1007/s12046-019-1166-1)
8. **Suman Das** and Debjani Chakraborty. "Graphical method to solve fuzzy linear programming". *Sādhana*,

2022, 47, no. 4: 1-11. Q2, SCIE, IF=1.6. Doi: [10.1007/s12046-022-02025-8](https://doi.org/10.1007/s12046-022-02025-8).

9. Debashree Guha, **Suman Das**, and Debjani Chakraborty "OWA based MAGDM technique in evaluating diagnostic laboratory under fuzzy environment". International Journal of Fuzzy Logic Systems (IJFLS), 2019 Vol.9 (2). Doi: [10.5121/ijfls.2019.9201](https://doi.org/10.5121/ijfls.2019.9201).

Conference Paper

1. Prashant, Mohit, Arvind Easwaran, **Suman Das**, and Michael Yuhas. "Guaranteeing Out-Of-Distribution Detection in Deep RL via Transition Estimation." In Proceedings of the AAAI Conference on Artificial Intelligence, vol. 39, no. 12, pp. 12452-12460. 2025..
2. **Suman Das**, Debjani Chakraborty, and László T. Kóczy. "Process of Inversion in Fuzzy Interpolation Model using Fuzzy Geometry". In *2020 IEEE International Conference on Fuzzy Systems (FUZZIEEE)*, 2020 July, (pp. 1-8). IEEE. Doi: [10.1109/FUZZ48607.2020.9177698](https://doi.org/10.1109/FUZZ48607.2020.9177698).

Conference Paper Presentations

1. **Suman Das** and Debjani Chakraborty. "Genesis and Transformations of Fuzzy Point in Fuzzy Geometry". *International Conference on Emergent Research in Mathematics and Engineering - (ICERME-2019)*.

Achievements:

1. Qualified GATE (Mathematics) in 2016 with All India Rank -60.
2. Qualified CSIR-UGC NET (Mathematical Science) in 2016 (June) with All India Rank -53.
3. Recipient of the INSPIRE Scholarship by Department of Science & Technology (DST), India (2010-2015).
4. Recipient of the Merit Cum Means Scholarship by Govt. of West Bengal, India (2008-2010).

Recommendations

Prof. Debjani Chakraborty (PhD Supervisor) Professor, Department of Mathematics, Indian Institute of Technology Kharagpur, West Bengal, India-721302 Phone: +91- 3222 283638 Emails: debjani@maths.iitkgp.ac.in Web Page	Dr. Arvind Easwaran (Post-Doc Supervisor) Associate Professor, SCSE, Nanyang Technological University, Singapore- 639798 Email: arvinde@ntu.edu.sg Web Page
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Dr. Suman Das