

Tapas Kumar Mishra, Ph.D.

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Tapas Kumar Mishra joined National Institute of Technology, Rourkela in February 2018. He is serving as an Assistant Professor in the Department of Computer Science for the last 6 years. His primary interests are Combinatorics and Graph Theory. He has received a project under the MATRICS scheme from SERB in this direction in December 2023. Moreover, he has broadened his research to the directions of Natural Language Processing. He has undertaken and completed one project from Meity, Govt. of India. He has three Ph.D scholars (two scholars have graduated, one has submitted her thesis). He has also supervised more than 20 undergraduates and more than 20 masters students.

Employment History

2018 – Cont. 📌 **Assistant Professor, National Institute of Technology Rourkela.**

Education

- 2013 – 2017 📌 **Ph.D. Computer Science & Engineering, Indian Institute of Technology, Kharagpur**
Thesis title: *Bisecting families and related problems.*
Fields: *Combinatorics and Algorithms.*
- 2011 – 2013 📌 **M.Tech. Computer Science & Engineering, Indian Institute of Technology, Kharagpur**
Thesis title: *Ramsey numbers for complete bipartite and 3-uniform tripartite subgraphs.*
CGPA: 9.07 (out of 10).
- 2006 – 2010 📌 **B.Tech. Computer Science & Engineering, Veer Surendra Sai University of Technology, Burla**
CGPA: 8.35 (out of 10).
- 2004 – 2006 📌 **Higher Secondary G M Junior College, Sambalpur**
Percentage: 81.2 (out of 100).
- 2004 📌 **Matriculation S.A.I.I.E.&R, Sambalpur**
Percentage: 90.8 (out of 100).

Research Publications

Journal Articles

- 1 T. Dalai, **T. K. Mishra**, and P. K. Sa, “Deep learning-based pos tagger and chunker for odia language using pre-trained transformers,” *ACM Transactions on Asian and Low-Resource Language Information Processing*, vol. 23, no. 2, pp. 1–23, 2024.
- 2 S. B. Das, D. Panda, **T. K. Mishra**, and B. K. Patra, “Statistical machine translation for indic languages,” *Natural Language Processing*, 2024. [🔗 URL: https://doi.org/10.1017/nlp.2024.26](https://doi.org/10.1017/nlp.2024.26).
- 3 S. B. Das, D. Panda, **T. K. Mishra**, B. K. Patra, and A. Ekbal, “Multilingual neural machine translation for indic to indic languages,” *ACM Transactions on Asian and Low-Resource Language Information Processing*, 2024.
- 4 S. B. Das, L. R. Rodrigues, **T. K. Mishra**, and B. K. Patra, “An approach for mistranslation removal from popular dataset for indic mt task,” *arXiv preprint arXiv:2401.06398*, 2024.

- 5 **T. K. Mishra**, "On the size of an r -wise fractional L -intersecting family," *Journal of Combinatorics*, vol. 15, no. 1, pp. 77–87, 2024.
- 6 A. Sen, S. Dombe, **T. K. Mishra**, and R. Dash, "Hgr-fyolo: A robust hand gesture recognition system for the normal and physically impaired person using frozen yolov5," *Multimedia Tools and Applications*, pp. 1–19, 2024.
- 7 T. Dalai, **T. K. Mishra**, and P. K. Sa, "Part-of-speech tagging of odia language using statistical and deep learning based approaches," *ACM Transactions on Asian and Low-Resource Language Information Processing*, vol. 22, no. 6, pp. 1–24, 2023.
- 8 S. B. Das, A. Biradar, **T. K. Mishra**, and B. K. Patra, "Improving multilingual neural machine translation system for indic languages," *ACM Transactions on Asian and Low-Resource Language Information Processing*, vol. 22, no. 6, pp. 1–24, 2023.
- 9 A. Sen, **T. K. Mishra**, and R. Dash, "Deep learning-based hand gesture recognition system and design of a human–machine interface," *Neural Processing Letters*, vol. 55, no. 9, pp. 12 569–12 596, 2023.
- 10 R. Mathew, **T. K. Mishra**, R. Ray, and S. Srivastava, "Modular and fractional L -intersecting families of vector spaces," *The Electronic Journal of Combinatorics*, P1–45, 2022.
- 11 A. Sen, **T. K. Mishra**, and R. Dash, "A novel hand gesture detection and recognition system based on ensemble-based convolutional neural network," *Multimedia Tools and Applications*, vol. 81, no. 28, pp. 40 043–40 066, 2022.
- 12 M. Sharma, **T. K. Mishra**, and A. Kumar, "Source code auto-completion using various deep learning models under limited computing resources," *Complex & Intelligent Systems*, vol. 8, no. 5, pp. 4357–4368, 2022.
- 13 N. Balachandran, R. Mathew, **T. K. Mishra**, and S. P. Pal, "Bisecting and d-secting families for set systems," *Discrete Applied Mathematics*, vol. 280, pp. 2–13, 2020.
- 14 N. Balachandran, R. Mathew, **T. K. Mishra**, and S. P. Pal, "System of unbiased representatives for a collection of bicolourings," *Discrete Applied Mathematics*, vol. 286, pp. 116–127, 2020.
- 15 R. Mathew and **T. K. Mishra**, "A combinatorial proof of fisher's inequality," *Graphs and Combinatorics*, vol. 36, no. 6, pp. 1953–1956, 2020.
- 16 N. Balachandran, R. Mathew, and **T. K. Mishra**, "Fractional l -intersecting families," *The Electronic Journal of Combinatorics*, vol. 26, no. 2, pp. 2–40, 2019.
- 17 N. Balachandran, R. Mathew, **T. K. Mishra**, and S. P. Pal, "Induced-bisecting families of bicolourings for hypergraphs," *Discrete Mathematics*, vol. 341, no. 6, pp. 1732–1739, 2018.
- 18 **T. K. Mishra** and S. P. Pal, "Lower bounds for ramsey numbers for complete bipartite and 3-uniform tripartite subgraphs," *Journal of Graph Algorithms and Applications*, vol. 17, no. 6, pp. 671–688, 2013.



Conference Proceedings

- 1 S. B. Das, A. Biradar, **T. K. Mishra**, and B. K. Patra, "Nit rourkela machine translation (mt) system submission to wat 2022 for multiindicmt: An indic language multilingual shared task," 2022.
- 2 S. Bhatt and **T. K. Mishra**, "Analyzing the linguistic structure of questions to make unanswered questions answered," in *Machine Learning, Image Processing, Network Security and Data Sciences: Second International Conference, MIND 2020, Silchar, India, July 30-31, 2020, Proceedings, Part I 2*, Springer Singapore, 2020, pp. 96–110.
- 3 **T. K. Mishra**, J. Sadhu, and A. Kumar, "Boundary detection in dynamic wireless sensor networks using convex hull techniques," in *2020 IEEE Calcutta Conference (CALCON)*, IEEE, 2020, pp. 368–372.
- 4 **T. K. Mishra** and S. P. Pal, "Lower bounds for ramsey numbers for complete bipartite and 3-uniform tripartite subgraphs," in *WALCOM: Algorithms and Computation*, 2013, pp. 257–264.

Books and Chapters




- 1 J. Arya, A. Kumar, A. P. Singh, **T. K. Mishra**, and P. H. Chong, "Blockchain: Basics, applications, challenges and opportunities," in 2021.
- 2 B. Yedle, G. Shrivastava, A. Kumar, A. K. Mishra, and **T. K. Mishra**, "A survey: Security issues and challenges in internet of things," in Springer Singapore, 2021, pp. 75–86.

Sponsored Projects



















- 2020 – 2024  *Design and Development of E-learning Platform for Assisting Underprivileged (SC/ST) School Students in Rourkela Region, Odisha* granted from MEITY, Govt. of India.
- 2024 – Cont.  *Almost Intersecting Families* granted from SERB, Govt. of India.

Scholars Supervised

Ph.D Scholars

- 1  **Tusarkanta Dalai**. Sequence Labelling tasks for low resource languages (Graduated).
- 2  **Abir Sen**. Summarization tasks for low resource languages (Graduated).
- 3  **Sudhansubala Das**. Machine Translation tasks for low resource languages. (Thesis Submitted).

Masters

- 1  **Abu Affan Ansari**. Speech translation for low resource languages. 2024-Cont.
- 2  **Zafeer Ahamad**. AI in drug discovery. 2024-Cont.
- 3  **Ayush Singh**. Virtual assistant for legal domain in India. 2024-Cont.
- 4  **Thanneeru Srinath Reddy**. Improving state of the art dependency parsing. 2024-Cont.
- 5  **Samujjal Choudhury**. Machine Translation for low resource languages. 2023-2024.
- 6  **Agniva Mukhopadhyay**. Improving Neural Machine Translation. 2023-2024.
- 7  **Chandra Singh**. Natural language query processing. 2023-2024.
- 8  **Taware Shreya Pravin**. Digital Assistants using NLP for INDIC languages. 2023-2024.
- 9  **Adarsh Tiwari**. Improving Machine Translation by modifying attentions. 2023-2024.
- 10  **Shubham Bhadoria**. Hindi Text Summarizer for Hindi Language. 2022-2023.
- 11  **Lovepreet Singh**. Named Entity Recognition System for Indian languages. 2022-2023.
- 12  **Dombe Shubham Dhananjay**. Building Sturdy Hand Gesture Detection and Recognition System in Complicated Background. 2022-2023.
- 13  **Pawan Kumar**. Differential Privacy In Natural Language Processing Tasks. 2021-2022.
- 14  **Nirmal Chandra Panda**. Text Summarization and Text Translation. 2021-2022.
- 15  **Ajay Biswas**. Classification of Comments Supporting the Indian Farmers' Protest Using Active Learning and Weak Supervision. 2021-2022.
- 16  **Shreyansh Gupta**. Re-evaluation of Knowledge graph completion methods. 2020-2021.
- 17  **Ponduru Jagadeesh**. Comparison and Evaluation of Python based NLP Libraries. 2020-2021.
- 18  **Madhab Sharma**. Source Code Auto-completion using Deep Learning Models. 2020-2021.

Scholars Supervised (continued)

- 19 **Shashank Bhatt.** Analyzing the Linguistic Structure of the Question Text and Finding the Characteristics so that open Question may become Answerable. 2019-2020.
- 20 **Sadhu Jayadeep.** Boundary detection in Wireless Sensor Networks using Convex hull techniques. 2018-2019.

Bachelors

- 1 **Tanmay Karn.** Named Entity Recognition using Deep Learning Models in Hindi Language. 2024-Cont.
- 2 **Anurup Chandra Mondal.** English to Hindi Machine Translation System. 2024-Cont.
- 3 **Sneha Kumari.** Phrase-based Machine Translation System for English-Bengali Language Pair. 2024-Cont.
- 4 **Pranav Kumar Vaishnava.** Automatic Speech Recognition (ASR) for Hindi Language. 2023-2024.
- 5 **Sajeeb Das.** A Method for Eliminating Language Differences Between English and French Language. 2023-2024.
- 6 **Chandra Bhusan Sonal.** Video Captioning : Generation of descriptions from digital videos. 2023-2024.
- 7 **Yadavalli Venkata Krishna Jithendra.** Vehicle detection and tracking using improved YOLOv7 and sorting algorithm 2022-2023.
- 8 **Prabhat Kumar Karna.** Real-Time Eye Gaze Tracking and Eye Blinking Detection System based on Deep Convolutional Neural Networks. 2022-2023.
- 9 **Maharshi Rohith Donthi.** Named Entity Recognition using Deep Learning Models in Hindi Language. 2022-2023.
- 10 **Leo Raphael Rodrigues.** English to Hindi Machine Translation System. 2022-2023.
- 11 **Divyajyoti Panda.** Phrase-based Machine Translation System for English-Bengali Language Pair. 2022-2023.
- 12 **Anupam Das.** Development of POS tagger in Odia Language. 2022-2023.
- 13 **Prabhat Kumar Sahani.** Classification of comments about Citizenship Amendment Act, 2019 using Active Learning and Weak Supervision. 2021-2022.
- 14 **Deepesh Kumar Rai.** Detection of fake news about COVID-19 based on twitter feeds. 2021-2022.
- 15 **Ankita Das.** Face Mask Detection With Alert System. 2020-2021.
- 16 **Lakkaraju Sai Kiran.** One-shot Facial Recognition by Promoting Underrepresented Classes. 2019-2020.
- 17 **Gunasekhar Darapaneni.** Drowsiness Detection. 2019-2020.
- 18 **Chandan Kumar Tandi.** To Detect Comments Supporting NRC in Assam. 2019-2020.
- 19 **Bonala Shivasai.** Fake profile detection in Social Media. 2019-2020.
- 20 **Unique Chhetri.** ECG Classification using Convolutional Neural Network. 2018-2019.
- 21 **Kartik Nahak.** Medical Image Segmentation Using U-Net. 2018-2019.
- 22 **Gunturu Vishnu Vardhan.** Node Scheduling in Underwater networks using Voronoi diagrams. 2018-2019.
- 23 **Gangiredda Naveen Chakri.** Optimal Placement of Charging Station for Electric vehicles 2018-2019.

References

Dr. Sudebkumar Prasant Pal

Professor

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