

# Manali Dutta

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## Personal Statement

My research focuses on stochastic control and reinforcement learning, particularly in networked control systems, remote estimation, and learning under communication constraints.

## Education

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|---------------------|--|
| Aug, 2021 – Current | ■ <b>Indian Institute of Science, Bangalore</b><br><b>Ph.D., Dept. of Computer Science and Automation</b> , CGPA: 8.3/10   |
| 2019 – 2021         | ■ <b>Indian Institute of Technology Kharagpur</b><br><b>M.Tech., Industrial Systems Engineering</b> , CGPA: 9.76/10<br>Thesis title: <i>Predictive maintenance and optimal policy selection of industrial assets: A Hidden Markov Model based approach</i> |
| 2010 – 2014         | ■ <b>Kalinga Institute of Industrial Technology, Bhubaneswar</b><br><b>B.Tech. Electronics and Instrumentation Engineering</b> , CGPA: 9.38/10<br>Thesis title: <i>Implementation of cascade control for a level process</i>                               |

## Awards and Achievements

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| 2024 | ■ <b>Best Presentation Award</b> , Cluster: Networking and IoT, EECS Research Symposium, IISc  |
| 2021 | ■ <b>Institute Silver Medal</b> , awarded for ranking first (order of merit) among M.Tech. graduating students, ISE Division, IIT Kharagpur                        |
|      | ■ <b>Roshan L Tayalia IIIE Award</b> , awarded for ranking first (order of merit) among all outgoing graduating students of ISE division, IIT Kharagpur            |
| 2014 | ■ <b>Vice-Chancellor's Silver Medal</b> , awarded for securing highest CGPA in B.Tech in Electronics and Instrumentation Engineering, KIIT University, Bhubaneswar |

## Research Publications

### Journal Articles


- 1 **Manali Dutta** and Rahul Singh, "Optimal risk-sensitive scheduling policies for remote estimation of autoregressive markov processes," *IEEE Control Systems Letters*, 2024. 🔗 URL: <https://ieeexplore.ieee.org/document/10812990>.

### Conference Proceedings


- 1 **Manali Dutta** and Rahul Singh, "Optimal scheduling policies for remote estimation of autoregressive markov processes over time-correlated fading channel," in *2023 62nd IEEE Conference on Decision and Control (CDC)*, IEEE, 2023, pp. 6455–6462. 🔗 URL: <https://ieeexplore.ieee.org/document/10384144>.

### Manuscripts under review

- 1 **Manali Dutta**, Gourav Saha, Rahul Singh, and Ness B Shroff, "Delay-optimal transmission scheduling policies for time-correlated fading channels," *Submitted to IEEE/ACM Transactions on Networking*, under review (2025). 🔗 URL: <https://arxiv.org/abs/2511.18048>.

- 2 **Manali Dutta**, Rahul Singh, and Shalabh Bhatnagar, "Jointly optimal policies for remote estimation of autoregressive markov processes over time-correlated fading channel," *Submitted to IEEE Transactions on Automatic Control*, under review (2026).  URL: <https://arxiv.org/abs/2512.21630>.



## Talks

- 2024  **EECS Research Symposium, IISc**– *Low Complexity Optimal Policies for Networked Control Systems*
-  **Centre for Networked Intelligence Seminar Series, IISc** – *Low Complexity Optimal Policies for Networked Control Systems*. 


## Teaching Experience

- Fall 2024  Teaching Assistant for E2 202: **Random Process**




## Coursework

- Postgraduate  Random Processes, Real Analysis, Measure Theory, Topics in Artificial Intelligence, Reinforcement Learning, Stochastic Control, Matrix Theory, Production Planning and Inventory Control, Logistics and Supply Chain Management, Decision Modelling
- Undergraduate  Engineering Mathematics, Signals and Systems, Control Systems, Digital Signal Processing, Analog Communication, Digital Communication

## Employment History

- July, 2014 – Dec, 2017  **General Manager**, Trident Group India, Budhni, Madhya Pradesh
- **Supervised** preventive and predictive maintenance activities for reducing breakdown / down time, and enhancing operational effectiveness of Dyeing machines
  - **Performed troubleshooting** of instruments and identified suitable counter-measures
  - **Supervised** a team of 17 members ensuring safe and effective operation
  - **Rewarded** by CEO for being the best new performer in 2017

## Skills

- Languages  Strong reading, writing and speaking competencies for English, Hindi, Bengali, Assamese
- Coding  Python, R, MATLAB
- Misc.  Academic research, teaching, training, consultation,  $\LaTeX$  typesetting and publishing