

Prathamesh Mayekar

Email: prathamesh220@gmail.com

Mobile: +91-9980639405/+65-91336690

Webpage: <https://prathamesh220.github.io/> LinkedIn: www.linkedin.com/in/prathamesh-mayekar-04269a28/

Title	Research Scientist at Propheus, Bangalore, India	<i>Present</i>
Research Interest	Applied Research: Computational Advertising, Federated Learning, Differential Privacy. Theoretical Research: Information Theory, Applied Probability, Stochastic Optimization, Statistics under Information Constraints, Online Learning, Machine Learning, Multi-Armed Bandits.	
Education	Indian Institute of Science, Bengaluru, Ph.D., Electrical and Communication Engineering <i>July' 16-July' 21</i> <ul style="list-style-type: none">Thesis Topic: <i>Compression Algorithms for Distributed Computing and Learning</i>CGPA: 9.25/10 Indian Institute of Technology Bombay, Mumbai, M.Tech., Industrial Engineering and Operations Research <i>July'13-June'15</i> <ul style="list-style-type: none">Thesis Topic: <i>Multi-armed Bandit Approach to Dynamic Pricing</i>CGPA: 9.44/10 K.J.Somaiya College of Engineering, Mumbai, B.E, Electronics and Communication Engineering <i>July'09-June'13</i>	
Honors and Awards	<ol style="list-style-type: none">Recipient of the Seshagiri Kaikini Medal for the best Doctoral Dissertation from ECE Dept, Indian Institute of Science, 2024.Runner-up for the IKDD Doctoral Dissertation in Data Science, 2022.Recipient of the Jack Keil Wolf Student Paper Award (Best Student Paper Award) at International Symposium on Information Theory (ISIT), 2018, Colorado, USA.Recipient of the Wipro PhD. Fellowship, Indian Institute of Science, 2018.Finalist for Qualcomm Innovation Fellowship, 2018, Bangalore, India.Winner of Poster Presentations in Supply Chain Practitioner's Council (SCPC), Mumbai Chapter. 2015, Mumbai, India.	
Work Experience	Propheus, Bangalore, India	<i>Present</i>
	Research Scientist I lead the AI team at Propheus, where our recent focus is on developing quantitative representations for geospatial regions and improving the accuracy of geospatial supervised learning tasks.	
	National University of Singapore, Singapore	<i>September' 22- June' 23</i>
	Research Scientist Research Fellow in the Computer Science Department at the National University of Singapore, working on problems at the intersection of Federated Learning, Online Learning, and Information Theory.	

Huawei Research, Bangalore, India

February' 22- August' 22

Research Scientist

- I worked on computational (programmatic) advertising. In particular, I worked on building deep learning models for various ad types to increase their click-through rate and conversion rate (CTR/CVR).
- My input led to an increase in the traffic assigned to our models. For instance, for the native ad types, from the time I joined till I left, our traffic increased from 4% to 70% due to a model calibration algorithm I proposed.
- I was awarded three awards during my six-month tenure: I was part of one of the two teams to be awarded the Huawei India CEO award; I was one of the two employees to be awarded the Timely Incentive Award for the Second Quarter (Best performer award for the second quarter); I also received the SPOT award for July (best performer award for July).

Indian Urban Data Exchange (IUDX), Bangalore, India

August' 21 - January' 22

Research Scientist

I broadly worked on differential privacy. Specifically, I worked on creating differentially private data pipelines for various public queries.

TCS Innovation Lab (TRDDC), Pune, India.

July'15-July'16

Software Engineer

Broadly, I worked on optimizing IT systems using queuing theory, mathematical programming, and discrete event system simulation. A highlight of my time there was building a "what-if simulation engine" for a client using the discrete event simulation package "Simpy" in Python.

Major
Courses

Real Analysis,
Information Theory,
Probability Theory,
Concentration Inequalities,
Detection and Estimation Theory,
Topics in Information Theory and
Statistical Learning,

Stochastic Processes and Queuing Theory,
Optimization Techniques,
Integer Linear Programming,
Network Flow and Algorithms,
Markov Decision Processes,
Game Theory,
Foundations of Data Science.

Computing
Skills

Programming Languages: Python, Scikit, Numpy, Tensorflow.
Modeling and Computational Software: AWS, AMPL, CPLEX.

Journal Publications

1. **P Mayekar**, S Jha, A T Suresh, and H Tyagi. *Wyner-Ziv Estimators for Distributed Mean Estimation with Side Information and Optimization*, IEEE transactions on Information Theory.
2. S Jha, **P Mayekar**, and H Tyagi. *Fundamental limits of over-the-air optimization: Are analog schemes optimal?*, IEEE Journal on Selected Areas in Information Theory (Special Issue on Distributed Coding and Computation).
3. **P Mayekar** and H Tyagi. *RATQ: A Universal Fixed-Length Quantizer for Stochastic Optimization*, IEEE Transactions on Information Theory.
4. **P Mayekar**, P Parag, and H Tyagi. *Optimal Source Codes for Timely Updates*, IEEE Transactions on Information Theory.

1. **P Mayekar**, J Scarlett, and V Tan. Communication-Constrained Bandits under Additive Gaussian Noise, in the proceedings of International Conference on Machine Learning (ICML), 2023.
2. S Jha and **P Mayekar**. Fundamental Limits of Distributed Optimization over Multiple Access Channel, in the proceedings of IEEE Information Theory Workshop (ITW), 2023, Saint-Malo, France.
3. **P Mayekar**, S Jha, and H Tyagi. *Wyner-Ziv Compression is optimal for distributed optimization*, in the proceedings of IEEE International Symposium on Information Theory (ISIT), 2022, Aalto, Finland.
4. S Jha, **P Mayekar**, and H Tyagi. *Fundamental limits of over-the-air optimization: Are analog schemes optimal?* in proceedings of IEEE Global Communications Conference (GLOBECOM), 2021, Madrid, Spain.
5. J Acharya, C Canonne, **P Mayekar**, and H Tyagi. *Information-constrained optimization: Can adaptive processing of gradients help?*, in proceedings of Neural Information Processing Systems (NeurIPS), 2021.
6. **P Mayekar**, A T Suresh, and H Tyagi. *Wyner-Ziv Estimators: Efficient Distributed Mean Estimation with Side Information*, in proceedings of International Conference on Artificial Intelligence and Statistics (AISTATS), 2021.
7. **P Mayekar** and H Tyagi. *Limits on gradient compression for stochastic optimization*, in proceedings of IEEE International Symposium on Information Theory (ISIT), 2020, Los Angeles, USA.
8. **P Mayekar** and H Tyagi. *RATQ: A Universal Fixed-Length Quantizer for Stochastic Optimization*, in proceedings of International Conference on Artificial Intelligence and Statistics (AISTATS), 2020, Palermo, Italy.
9. **P Mayekar**, P Parag, and H Tyagi. *Optimal Lossless Source Codes for Timely Updates*, in proceedings of IEEE International Symposium on Information Theory (ISIT), 2018, Vail, USA. (Winner of the *Jack Keil Wolf Student Paper Award*.)
10. **P Mayekar** and N Hemachandra. *Some algorithms for correlated bandits with non-stationary rewards: Regret bounds and applications*. in proceedings of the Conference on Data Sciences (CODS), 2016, Pune, India
11. **P Mayekar**, V K Rai, A Puvvala, and H Vin. *Is prevention always better? A case in IT service management*, in proceedings of Pacific Asia Conference in Information Systems (PACIS) 2016, Chiayi, Taiwan.
12. **P Mayekar**, J. Venkateswaran, M. K. Gupta and N. Hemachandra. *Performance analysis and decomposition results for some dynamic priority schemes in 2-class queues*, in proceedings of International Symposium on Modeling and Optimization in Mobile, Ad Hoc, and Wireless Networks (WiOpt), 2015, Mumbai, India.

Reviewer

Information Theory

- IEEE Transactions on Information Theory (TIT).
- IEEE Journal on Selected Areas in Information Theory (JSAT).
- IEEE Transactions on Communication (TCOM).
- IEEE International Symposium on Information Theory (ISIT).
- IEEE Information Theory Workshop (ITW).

Machine Learning

- International Conference on Machine Learning (ICML).
- Conference on Neural Information Processing Systems (NeurIPS).
- International Conference on Representation Learning (ICLR).
- International Conference on Artificial Intelligence and Statistics (AISTATS).

Teaching Assistant

Indian Institute of Science, Bengaluru.

- Random Processes, E2 202

Autumn'18

Indian Institute of Technology Bombay, Mumbai.

- Markov Decision Processes, IE 708.
- Introduction to Stochastic Models, IE 611.

Spring'15

Autumn'14