CV

Basics

Name	Prashant Palkar
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Summary I am a faculty in the IEOR group in the Department of Mechanical Engineering at IIT Delhi. I work on theory, algorithms, software and applications of Optimization and Machine Learning. Recently, I have been working on some interesting projects in Indian Railways and Healthcare.

Work

2022.12 - PRESENT
New Delhi, India

Assistant Professor, IEOR, Department of Mechanical Engineering

Indian Institute of Technology Delhi

Working in the areas of Integer Programming, Machine Learning and Algorithmic Game Theory currently at IEOR, ME, IIT Delhi.

- Optimization, AI/ML, Railways, Healthcare

2021.04 - 2022.11
Augsburg, BY, Germany

Postdoctoral Researcher, Chair of Discrete Mathematics, Optimization, and Operations Research

Institute of Mathematics, University of Augsburg, Germany

Worked on Algorithmic Game Theory, in particular, on computation of Nash Equilibrium in Dynamic Traffic Assignment for Electric Vehicles

- Algorithmic Game Theory, Nonlinear Optimization, Electric Vehicles, Networks

2018.04 - 2018.08
Lemont, IL, USA

Research Aide

Mathematics and Computer Science Division, Argonne National Laboratory, Lemont, IL, USA

Worked on a globally convergent cutting-plane method for simulation-based optimization with integer constraints

- Derivative-free Optimization, Mixed-Integer Linear Programming, Solvers

2017.03 - 2017.07
Lemont, IL, USA

Research Aide

Mathematics and Computer Science Division, Argonne National Laboratory, Lemont, IL, USA

Worked on algorithms for Mixed-Integer Derivative-Free Optimization

- Derivative-free Optimization, Mixed-Integer Linear Programming, Optimization solvers

2009.10 - 2013.07

Manager and subsequently, Senior Manager, Process Modelling and Visualization, Technology Group Global Wires and Longs

Tata Steel

Modelled and provided solutions to optimization problems like 1D cutting-stock problem with multiple stock sizes, job-shop scheduling, vehicle loading (2D) etc. using heuristics and CPLEX solver in long products segment of steel; developed software (using C++, Vb.net, SQL) with embedded optimization modules for end-to-end management of `Cut and Bend' business centres of Tata Steel Ltd. and its partners in Singapore, China, Thailand and India via multiple site visits and customer interactions

- Cutting and Loading, Scheduling, Heuristics, CPLEX

Education

2013.07 - 2021.07
Mumbai, India

PhD

IEOR, Indian Institute of Technology Bombay

Mixed-Integer Nonlinear Optimization, Parallel Computing

2007.07 - 2009.06
Mumbai, India

Master of Technology

IEOR, Indian Institute of Technology Bombay

Vehicle Routing Problems, Integer Programming

Languages

Hindi
Native speaker

Marathi
Native speaker

English
Fluent

Sanskrit
Limited Proficiency

Interests

Optimization

Mathematical modeling
Linear and nonlinear optimization
Mixed-integer (linear and nonlinear) programming
Derivative-free optimization

Computing

Parallel computing (shared- and distributed-memory)
GPU and Quantum computing in optimization (beginner)

Game Theory

Algorithmic game theory
Computation of Nash Equilibria

Machine Learning

Reinforcement Learning
Deep Learning
Interplay of AI/ML and Optimization

Projects

2026.11 - 2027.04

Spare parts forecasting for Make-to-Order inventory (Thermo Fisher Scientific)

Involves improvement of prediction accuracy through advanced analytics and customer segmentation.

- Data Analytics
- AI/ML

2026.10 - 2027.11

Advanced Scheduling Optimization for Road-Train Operations (Delhivery)

Involves optimization of routes and scheduling using state-of-the-art optimization algorithms and computing techniques.

- Integer Programming
- Heuristics
- Constraint Programming
- AI/ML

2024.11 - 2027.02

Precision Timetabling for Indian Railways (with Centre for Railway Information Systems (CRIS))

Involves timetabling of passenger trains using state-of-the-art optimization algorithms and computing techniques for Indian railways.

- Constraint Programming
- Integer Programming
- Heuristics

2024.07 - 2024.12

3D Packing Optimization of rectangular SKUs within rectangular cartons (with Thermo Fisher Scientific)

Involves developing optimization and learning techniques to arrive at optimal type and number of cartons and optimal placement of SKUs within them.

- Mixed-Integer Linear Programming
- Clustering
- Decomposition

2024.11 - 2027.01

Freight Dynamic Pricing for Indian Railways (with Centre for Railway Information Systems (CRIS)) - Co-PI

Involves arriving at dynamic pricing strategies for freight trains for Indian Railways.

- Machine Learning
- Stackelberg Games
- Optimization

2022.12 - 2025.12

Theoretical, Computational And Software Advancements In Mixed-Integer Nonlinear Optimization (IRD, IIT Delhi)

Involves advancement of the open-source solver, Minotaur, being jointly developed with a team from IIT Bombay.

- Mixed-Integer Nonlinear Optimization
- Parallel Computing

2025.03 - 2026.08

Development of an Automated Optimal Airline Disruption Management System (with InterGlobe Aviation Ltd (Indigo Airlines)) - Co-PI

Involves development of a robust learning and optimization based agent to minimize the cascading losses due to various disruptions.

- Machine Learning
- Simulation
- Optimization

2026.03 - 2029.03

Automatic segmentation and reduction of anomalies in joints for presurgical planning (ARG, ANRF, with Orthopaedics team, MAMC)

Involves development of a tool for automatic anomaly detection, segmentation and reduction of joint fracture fragments and tumors for presurgical planning.

- Machine Learning
- Optimization
- Image Processing

Volunteer

Reviewer

Computational Optimization and Applications
INFORMS Journal on Computing
Discrete Applied Mathematics
Operational Research
Sādhanā

IEOR M.Tech. Coordinator, ME, IIT Delhi

IEOR Systems and Website Incharge, IIT Delhi

Multicore High-end Debian Servers
GPU workstations

Other interests

Music

Hindustani classical vocal
Light music (Bhajan, Ghazal, etc.)
Instrumental melodies

Sports

Badminton
Table tennis
Volleyball