One-Day Workshop on

Introduction to MIP Modeling in Python and Performance Tuning for Large-Scale Optimization

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Resource Person Bio: Dr. Alok Patel is the Founder and Principal Operations Research Scientist at DecisionOpt, a firm specializing in advanced optimization and operations research solutions. He holds a Ph.D. in Operations Research from the Industrial Engineering and Operations Research (IEOR) Department at IIT Bombay. Dr. Patel has led optimization engagements across logistics, manufacturing, and energy sectors, and regularly conducts industry workshops on mathematical programming, solver performance, and scalable OR implementations.

Venue: The Seminar Hall, Department of Management Studies, IISc, Bangalore 560012

Date: ***28th February 2026 (Saturday)***

Registration Fee: ***Rs. 1250/-*** for Industry; ***Rs. 1000/-*** for Academic; and ***Rs. 750/-*** for ORSI Members, Regular Research Scholars, and Regular PG Students

A Brief Summary:

This one-day workshop is designed to provide participants with both foundational knowledge and advanced strategies for solving real-world optimization problems using Mixed-Integer Programming (MIP). The program is structured in multiple sessions to systematically build modeling skills in Python and to introduce practical techniques for enhancing solver efficiency. The sessions will include lectures, hands-on implementation, and interactive discussion.

The workshop is particularly relevant for research scholars/students, academic faculty, and practitioners working in operations research, supply chain, logistics, and other data-driven decision-making domains.

Schedule:

Session 1 (9:30 AM – 11:00 AM) - Introduction to MIP Modeling in Python

Introduction to Mixed Integer Programming (MIP) formulation using Python-based optimization libraries such as PuLP and GurobiPy.

The first half of the session will focus on working through a few modeling problems and discussing model formulation and documentation, followed by an introduction to translating these formulations into code.

Key topics include model structure, decision variables, constraints, objectives, and solving basic optimization problems.

Coffee Break (11:00 AM – 11:30 AM)

Session 2 (11:30 AM – 1:00 PM) - Hands-On Implementation with PuLP & GurobiPy

Participants will work on live coding examples based on real-world optimization problems, building models step by step from formulation to solution. (Participants are requested to bring their own laptops with Python and PyCharm (Community Edition) pre-installed)

Lunch Break (1:00 PM – 2:30 PM)

Session 3 (2:30 PM – 4:00 PM) - Advanced Solver Tuning and Performance Optimization

Topics include:

- Reading and interpreting Gurobi solver logs
- Identifying and addressing modeling inefficiencies
- Warm-start strategies and leveraging problem structure
- Gurobi parameter tuning for runtime performance and numerical stability

Coffee Break (4:00 PM – 4:30 PM)

Session 4 (4:30 PM – 5:30 PM) - Q&A and Open Discussion

An open forum for participants to discuss modeling challenges, solver behavior, and application-specific issues. Individual feedback will be provided where feasible.

***For online payment*:** **Account Name:** ORSI – Karnataka **Account No.:** 41659227268
Account Type: Current Account **Bank Name:** State Bank of India **Branch Name**: IISc Bangalore
IFSC Code: SBIN0002215 **Swift Code**: SBININBB425

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Registration Form

Name of the Participant(s) ……………………………..……………………………………………….

Organization: …………………………………………….……………………………………………..

Contact Address: ………………………………………………………………………………………...

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Mobile and Email: ……………………….…………………………………………………….

Category of Participant : Industry / Academic / ORSI / Regular Scholar / Regular PG Student

Mode of payment (please tick as appropriate): Cash / Cheque / DD / NEFT / RTGS / IMPS

DD / Cheque / NEFT / RTGS / IMPS Details: ………………………………………………………

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Amount: ………………………………………………………………………………………………….

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Signature of the Delegate:

Registration fee for various categories is as follows

Rs. 1250/- for Industry;

Rs. 1000/- for Academic;

Rs. 750/- for ORSI Members, Regular Research Scholars, and Regular PG Students

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Note: DD / Cheque should be in favor of "***ORSI-Karnataka***" payable at Bangalore.

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Please mail the delegate registration form along with payment details (including DD / Cheque, if any) to "***ORSI-Karnataka***, ***Department of Management Studies, Indian Institute of Science, Bangalore - 560012, Karnataka, India***" or sent through email to : orsi.bgr@gmail.com