Gurobi®

PRODUCT BROCHURE

Gurobi Optimizer

The world's fastest, most powerful solver keeps getting better.

WWW.GUROBI.COM

Behind Every Great Decision

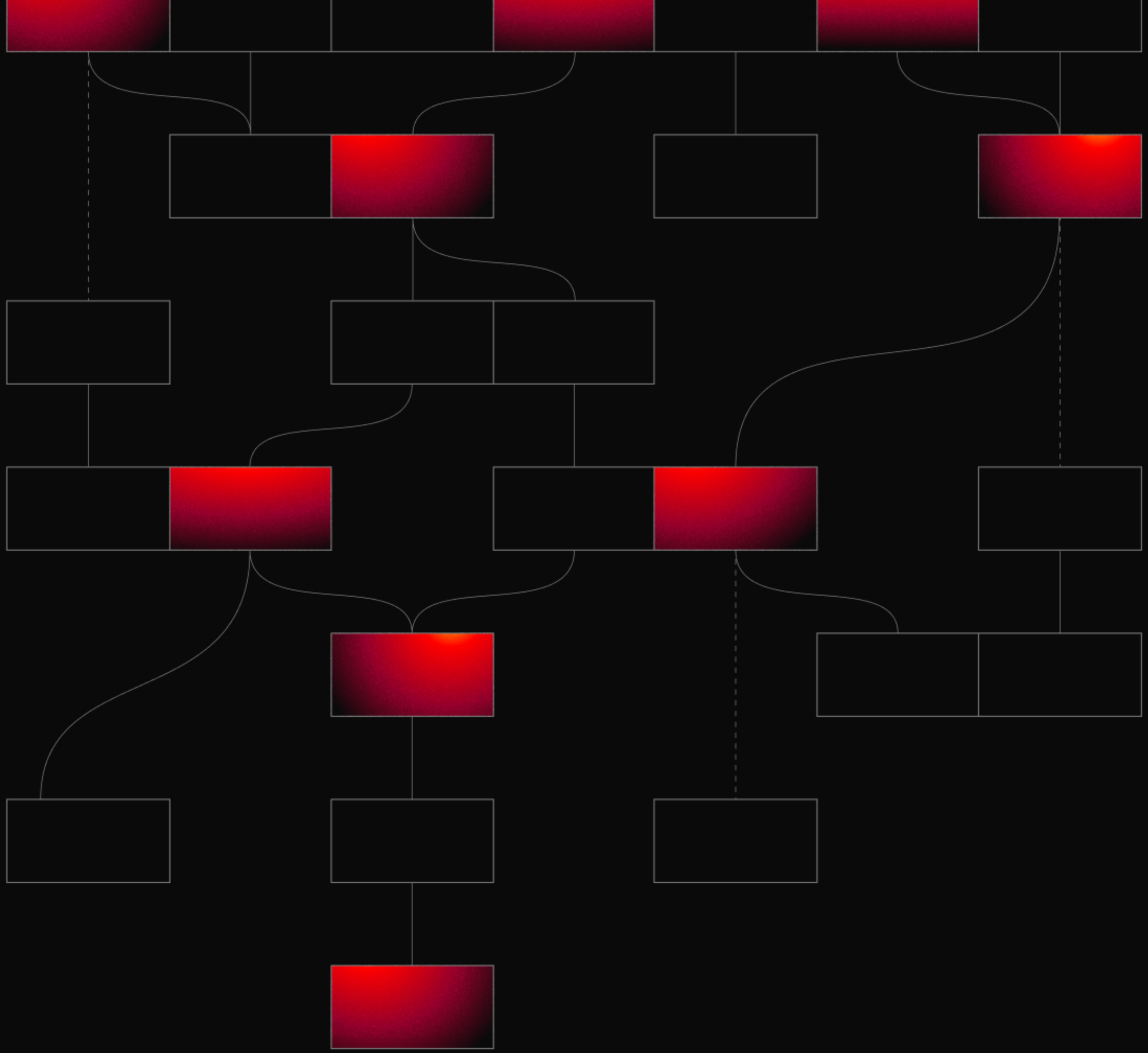
The Gurobi Difference

You have many choices when it comes to solvers. But if you're not using the best solver, you're leaving business value on the table.

Discover why the world's leading enterprises solve their complex, real-life business problems with Gurobi.

Customers switching to Gurobi can achieve a 518% ROI, with payback in under 6 months.





CHOOSE GUROBI

Top 10 Reasons to Choose Gurobi

- World's Fastest Speed
- Power of the Team
- Responsive, PhD-Level Support
- Flexible Licensing
- Full Range of Problem Types
- Ease of Use
- Advanced Functionalities
- Enterprise Integration
- Optimization in the Cloud
- Open-Source Tools

WORLD'S FASTEST SPEED

Solve Your Most Complex Models, with Time to Spare

Gurobi finds feasible and globally or locally optimal solutions faster than competing solver —with a performance gap that grows as model size and difficulty increase.

With Gurobi, you can keep adding complexity to your model —including millions of variables and constraints—and still solve within actionable limits.

"With Gurobi, Toyota has been able to significantly improve the speed and quality of its decision-making."

Daisuke Furutsu

Project Manager, Corporate IT Division, Toyota Motor Corporation

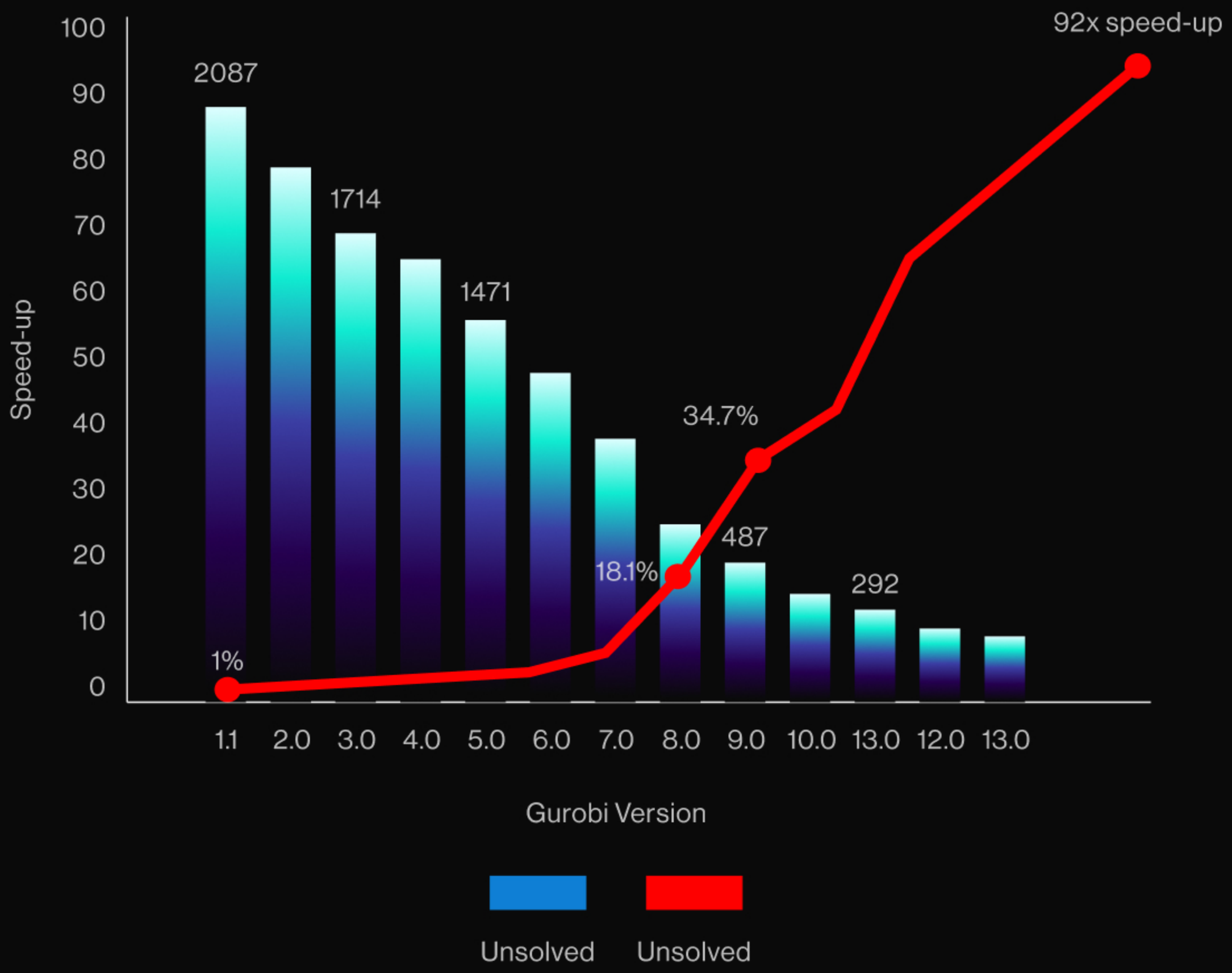


92x Speedup on MILP Since Version 1.1

Gurobi Version Comparison: 92x Speedup on MILP Since Version 1.1

Gurobi Version Comparison: Speed and Solvability (PAR-10)

Gurobi MILP Benchmark Suite



POWER OF TEAM

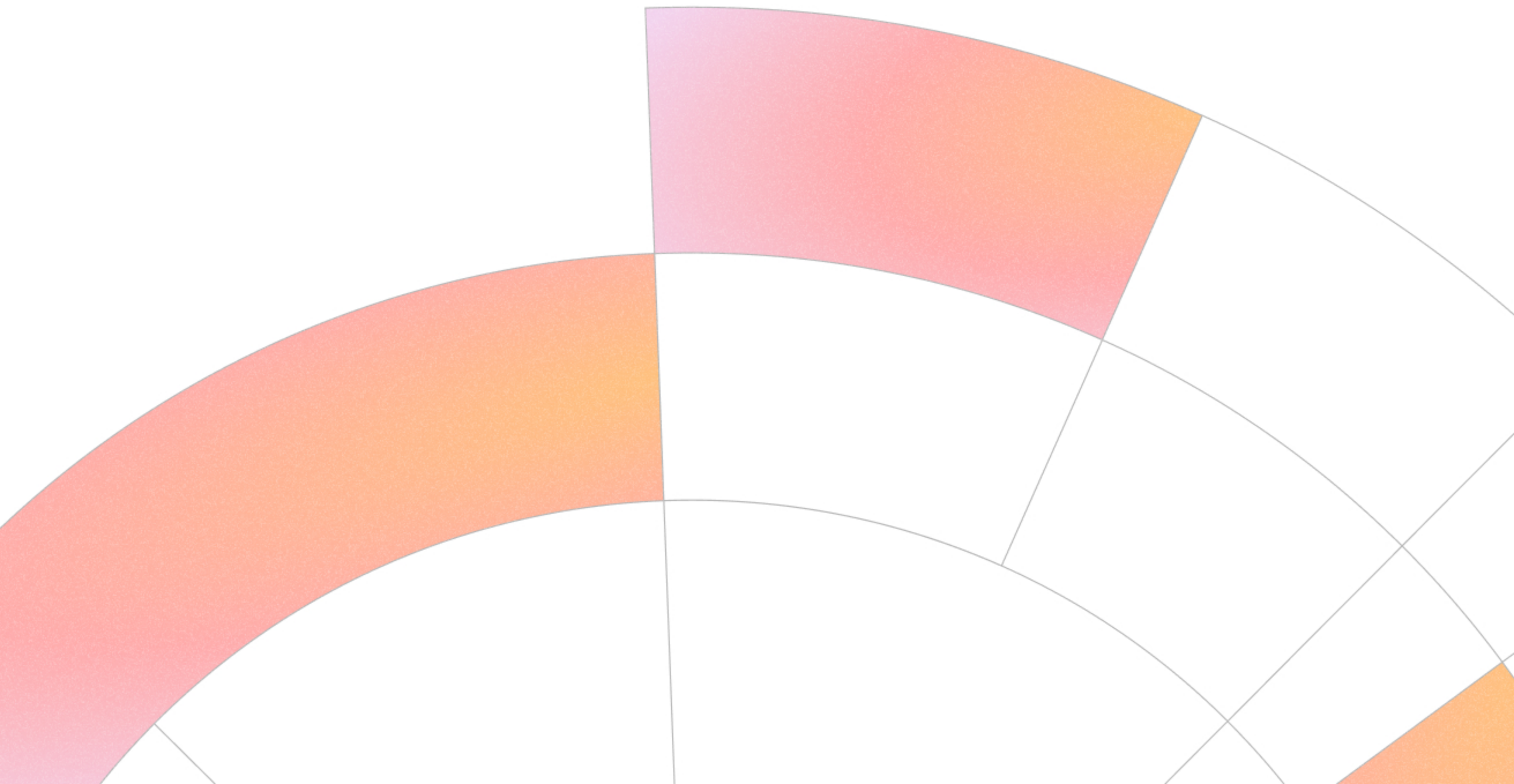
We Push the Limits of What's Possible, So You Can, Too

At Gurobi, mathematical optimization is at the heart of everything we do. That's why we've built an **R&D team** that includes the brightest minds in optimization software. They're smart, innovative, and—most of all—passionate about making our product the very best it can be.

"A key deciding factor for us was definitely the solver performance."

Matthias Wyss

Head of ImpaQt Consulting, swissQuant



Meet the Team



Akhil Nandan



Dr. Andreas Waechter



Dr. David Torres Sanchez



Dr. Edward Klotz



Fernando Orozco



Freddy Jimenez



Dr. Hassan Hijazi



Dr. Jaromil Najman



Joyce Chau



Keissy Vazquez



Michael Winkler



Dr. Michel Jaczynski



Dr. Oliver Bastert



Olivier Noiret



Dr. Pierre Bonami



Rinor Sadiku



Dr. Robert Luce



Dr. Roland Wunderling



Dr. Silke Horn



Dr. Simon Bowly



Dr. Stefan Heinz



Dr. Steven Edwards



Thomas Braam



Dr. Tobias Achterberg



Tristan Radisson



Wale Sipe



Xavier Nodet

RESPONSIVE, PHD-LEVEL SUPPORT

Get Answers in Hours, Not Days

With the Gurobi Experts team by your side, you get more than basic installation and configuration support. Our PhD-level optimization specialists will work with you, one-on-one, to provide the comprehensive guidance you need, so you can be successful with mathematical optimization.

"Their solver has met our high expectations, and the support they provide has been fantastic."

Michael North

Senior Director, NFL









GUROBI BY THE NUMBERS

98%

Customer
Satisfaction Score

56

Industry-Leading Net
Promoter Score (NPS)

Global

Coverage

Direct

Access to Our Experts

FLEXIBLE LICENSING

Your License Should Work for You (Not the Other Way Around)

Our flexible approach to licensing means you can use Gurobi how and where you want, for any number of users—for both development and deployment. You can scale up to add new projects easily, without undue administrative burdens.

"Their pricing is clear, simple, and cheaper than our prior solution by over 50%, and their pricing model makes us more agile."

Chief Technical Lead

$10B - $20B Global Transportation Enterprise

Custom, Partner, and Enterprise License Agreements and Flexible License Keys also available.

Flexible Licensing

Serious Flexibility

With the Gurobi Web License Service (WLS), you can deploy Gurobi almost anywhere—including physical machines, virtual machines, and container environments on Docker® and Kubernetes®, such as Amazon Web Services® (ECS and EKS) and Microsoft® Azure® (AKS).

FULL RANGE OF PROBLEM TYPES

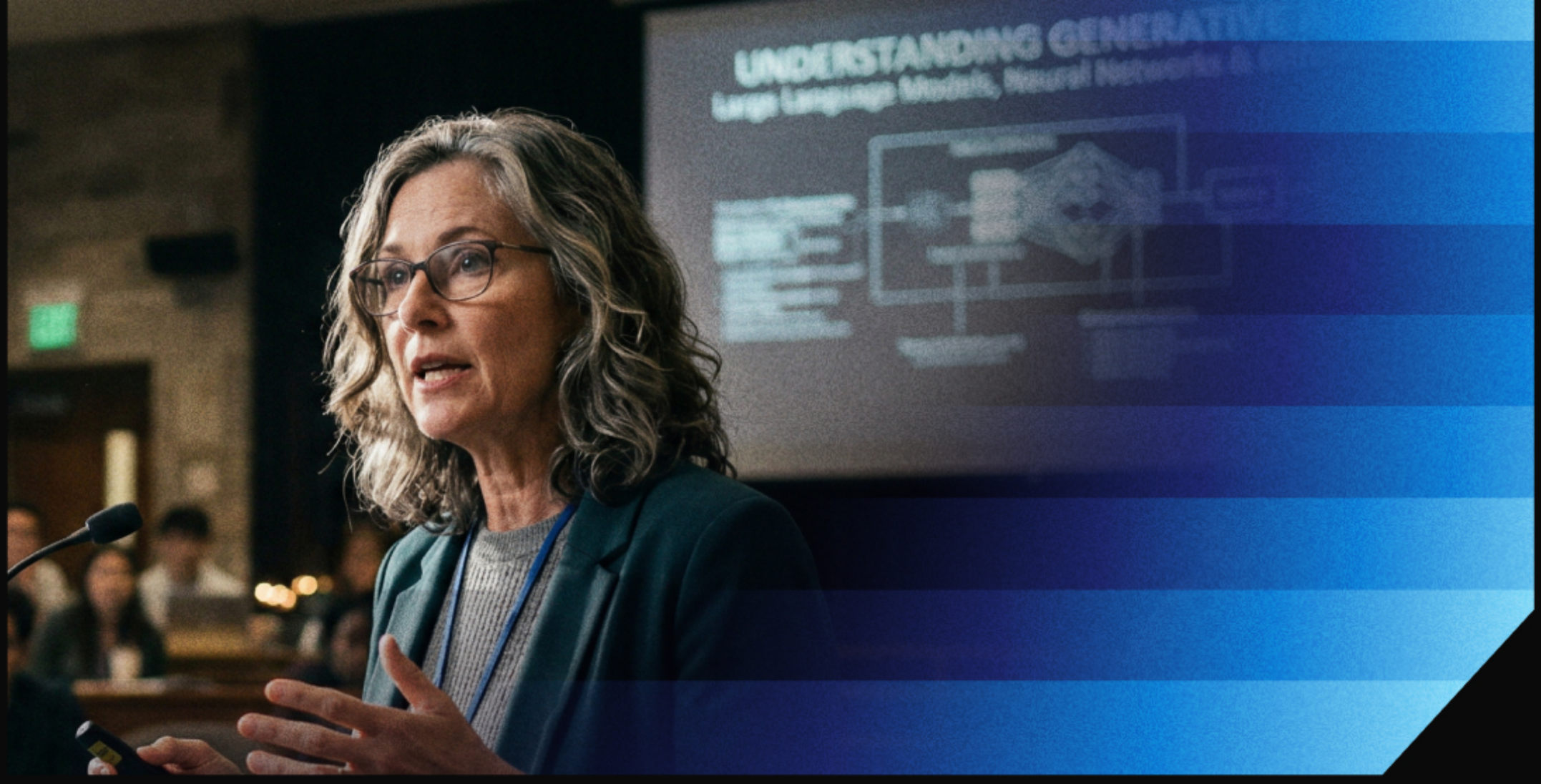
Solve Your Most Complex Problems

With Gurobi's advanced algorithms, you can solve models with linear, nonlinear, and quadratic (both convex and nonconvex) objectives and constraints, as well as general constraints, including piecewise-linear. And you can use any combination of continuous and integer variables. Now, with Gurobi 13.0, you can leverage our Primal-Dual Hybrid Gradient (PDHG) implementation to solve large-scale linear problems even faster. Designed for use on both CPUs and NVIDIA GPUs, this algorithm offers potential speed-ups for giant LPs. Meanwhile, our newly supported nonlinear barrier method can help you quickly reach locally optimal solutions.

"With Gurobi, we have more than doubled our development efficiency."

Mr. Hitoshi Azuma

Sub Leader, Power Technology Group, J-POWER Business Service Corporation



LINEAR PROGRAMMING (LP)

Deterministic, concurrent algorithm, running primal simplex, dual simplex, and parallel barrier with crossover

MIXED-INTEGER LINEAR PROGRAMMING (MILP)

Deterministic, parallel, featuring heuristics, solution improvement, cutting planes, and symmetry breaking

MIXED-INTEGER NONLINEAR PROGRAMMING (MINLP)*

Spatial branch-and-cut with LP relaxation

QUADRATIC PROGRAMMING (QP)*

Simplex and parallel barrier algorithms, spatial branch-and-cut for non-convex QPs

MIXED-INTEGER QUADRATIC PROGRAMMING (MIQP)*

Branch-and-cut with QP relaxations, using spatial branching for non-convex

QUADRATICALLY CONSTRAINED PROGRAMMING (QCP)*

Parallel barrier, branch-and-cut for non-convex QCPs

MIXED-INTEGER QUADRATICALLY CONSTRAINED PROGRAMMING (MIQCP)*

Branch-and-cut with LP or QCP relaxation, using spatial branching for non-convex

**Convex and nonconvex*

EASE OF USE

We Speak Your Language

Integrate Gurobi into your applications easily, using the languages you know best. Our lightweight, modern, intuitive programming interfaces minimize your learning curve while maximizing your productivity.

- Object-oriented interfaces for C++, Java, .NET, and Python
- Matrix-oriented interfaces for C, MATLAB, R, and Python
- Links to standard modeling languages: AMPL, GAMS, AIMMS, and MPL
- Links to Excel through Frontline Solvers

"[Gurobi's Python API] gives me the most control and flexibility to adjust the analyses to meet the client's interests or needs."

Alex Rothkopf

Supply Chain Management and Data Science Advisor, PATH

EASE OF USE

Gurobi + Python

Our Python API includes higher-level modeling constructs that make it easier to build optimization models. Choose from Anaconda Python distributions with pre-built libraries to support application development, Spyder for graphical development, and Jupyter for notebook-style development.

- Python interactive interface for powerful prototyping and quick testing
- Language extensions for easier model coding
- Pre-built Python libraries for full application development support
- Python Matrix API for matrix-oriented modeling using NumPy or SciPy matrices
- Pandas wrapper library for building optimization models from DataFrames and Series data
- Documented best practices to get you started quickly

ADVANCED FUNCTIONALITIES

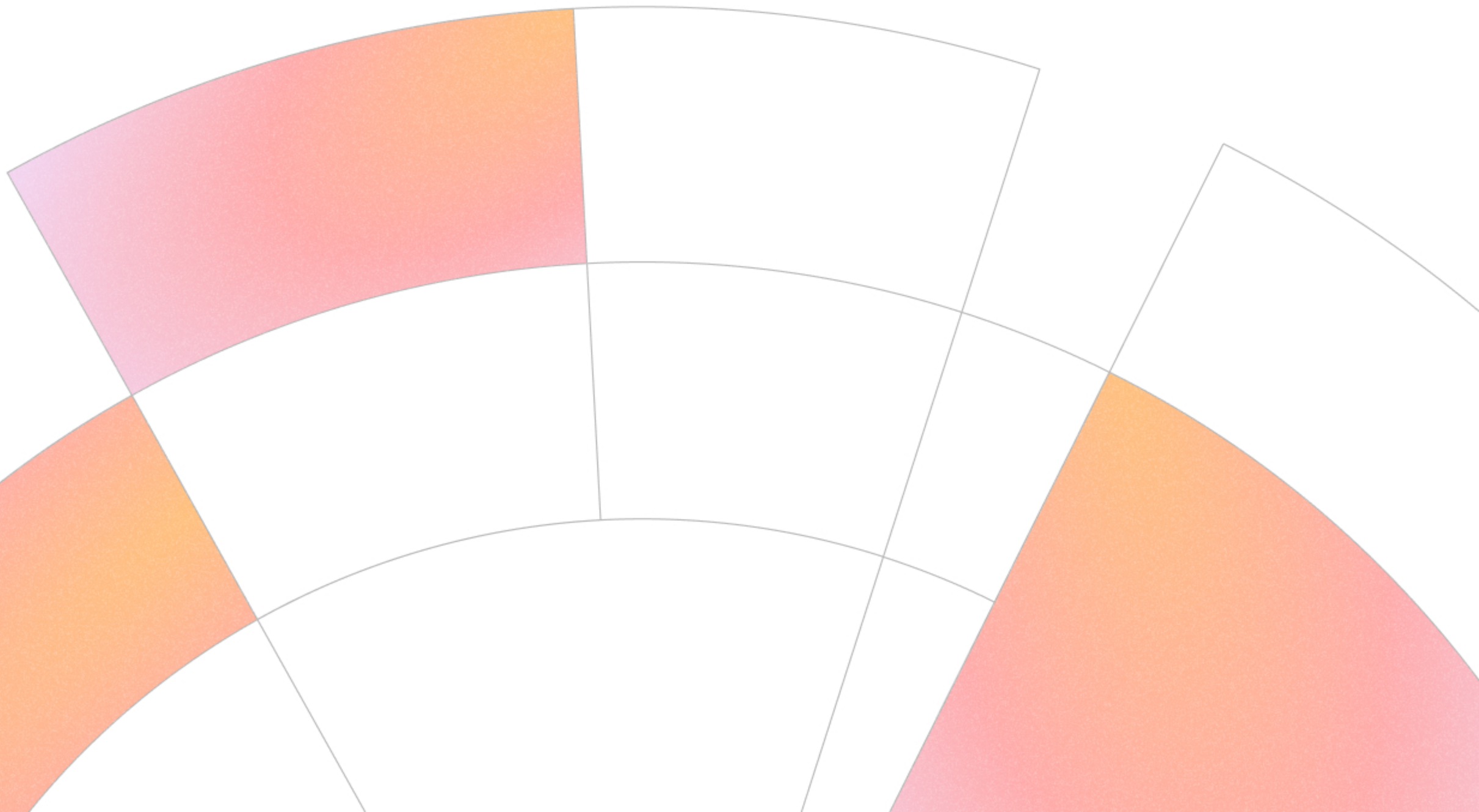
Work Smarter, Not Harder

We love optimization, and it shows. We're always looking for innovative ways to make our solver more powerful, so you can solve new problems—and harder problems—faster and easier than ever before. And we're just getting started.

"[Gurobi] is without a doubt the best vendor that we work with in terms of features."

Mine and Process Engineering Systems Lead

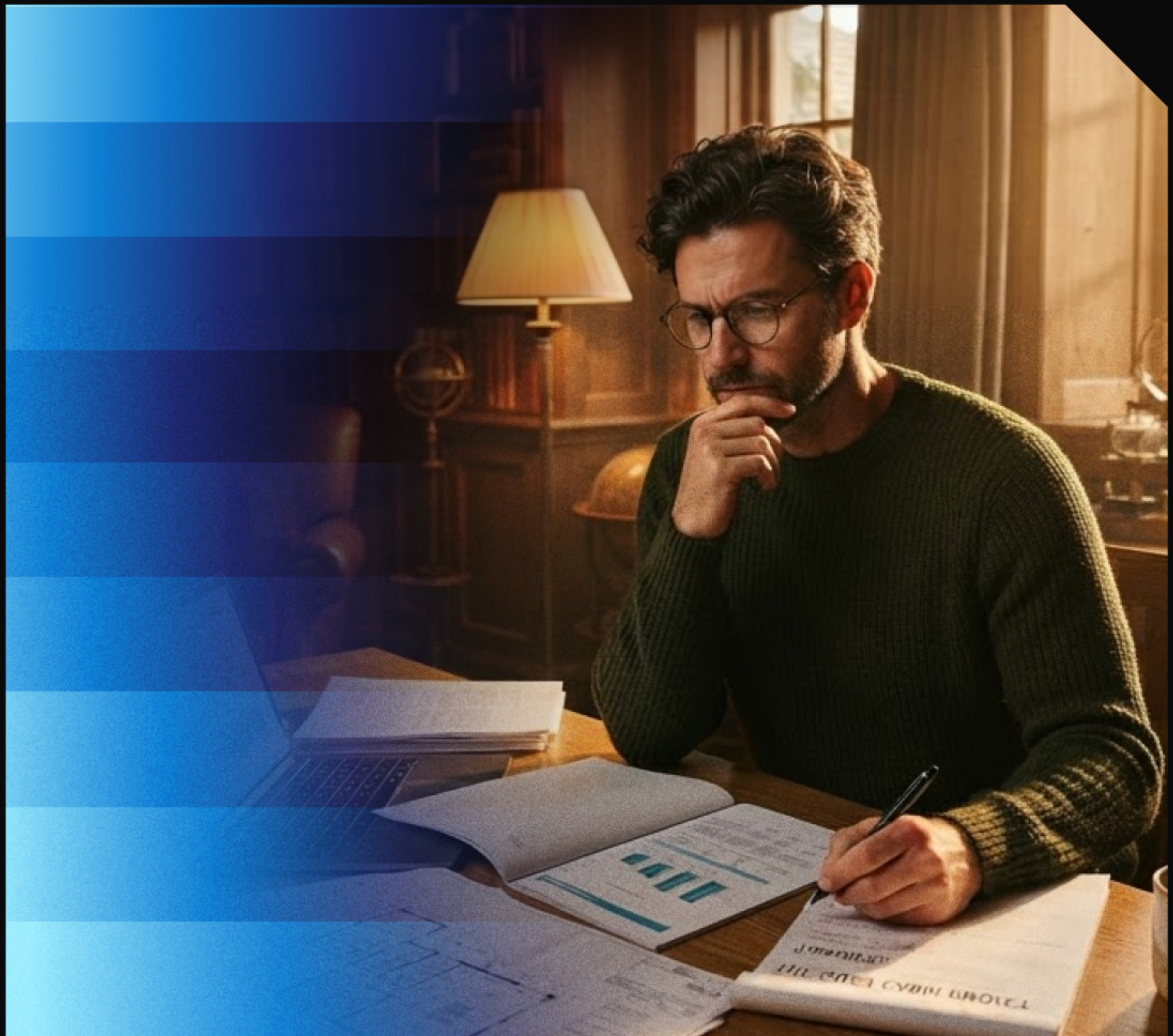
$10B - $20B Global Mining Enterprise



Customer Favorites

Plus our growing suite of open-source tools, including Gurobi Logtools, Gurobi Pandas, Gurobi Machine Learning, and Gurobi OptiMods.

- Multiple Objectives
- Multiple Scenarios
- Solution Pool
- General Constraints
- Infeasibility Analysis
- Partition Heuristic
- Python Matrix API
- No-Relaxation Heuristic
- Branching Priorities for Variables
- Callbacks
- Distributed Optimization



ENTERPRISE INTEGRATION

Build and Deploy High-Performance Optimization Applications

With Gurobi Compute Server, you can easily create powerful optimization applications and deploy them at scale. You'll make the most of your computing resources by offloading your optimization computations onto dedicated, clustered servers, complete with advanced queuing, load balancing, failover, and more.

"We went from building optimization models in Excel to using [Gurobi Compute Server]. The published application is now an intuitive, slick, and focused [tool] with best-in-class solver performance."

James Watson

Optimization Specialist, Tata Steel



Seamless Cluster Management

- User-Friendly Web-Based UI
- User-Friendly Web-Based UI
- LDAP and SAML Integration
- User Management
- Batch Mode
- Dynamic Distributed Tuning
- Support for Microsoft® Azure®, Cosmos DB®, MongoDB®, and Amazon® DocumentDB®
- Thread-based Load Balancing
- Autoscaling of Compute Server Clusters

OPTIMIZATION IN THE CLOUD

Get Up and Running with Gurobi, Fast

With Gurobi Instant Cloud, we handle all of the behindthe- scenes details. Just install Gurobi on a local machine, download a cloud license, and each Gurobi run is automatically started in Gurobi Instant Cloud. Voilà!

"We chose Gurobi because they have a superior solver, but also because they're scaling."

Franz Hero

Senior Vice President and Head of Developmental Digital Supply Chain, SAP



GUROBI INSTANT CLOUD

MAXIMUM OPTIMIZATION POWER

Choose the number and type of machines you want, create machine pools, and scale up or down with ease.

FLEXIBLE SUBSCRIPTION PLANS

Upgrade any time, with no restrictions on model size, users, or client machines.

ANYTIME AVAILABILITY

Spin up Gurobi on dedicated cloud servers in minutes, preconfigured with the latest version of Gurobi.

SUPPORT FOR AZURE AND EC2

Run Gurobi on fast, powerful cloud machines on Microsoft® Azure® and Amazon Web Services® EC2.

INTUITIVE WEB INTERFACE

Use the Cloud Manager to view active machines and jobs, as well as detailed job information and history.

ROOM TO GROW

Parallel With a simple REST API, your application can control its cloud servers., branch-and-cut for non-convex QCPs

STREAMLINED BILLING

Receive one bill for both license and machine costs, with no need to pay Amazon or Microsoft separately.

OPEN-SOURCE TOOLS

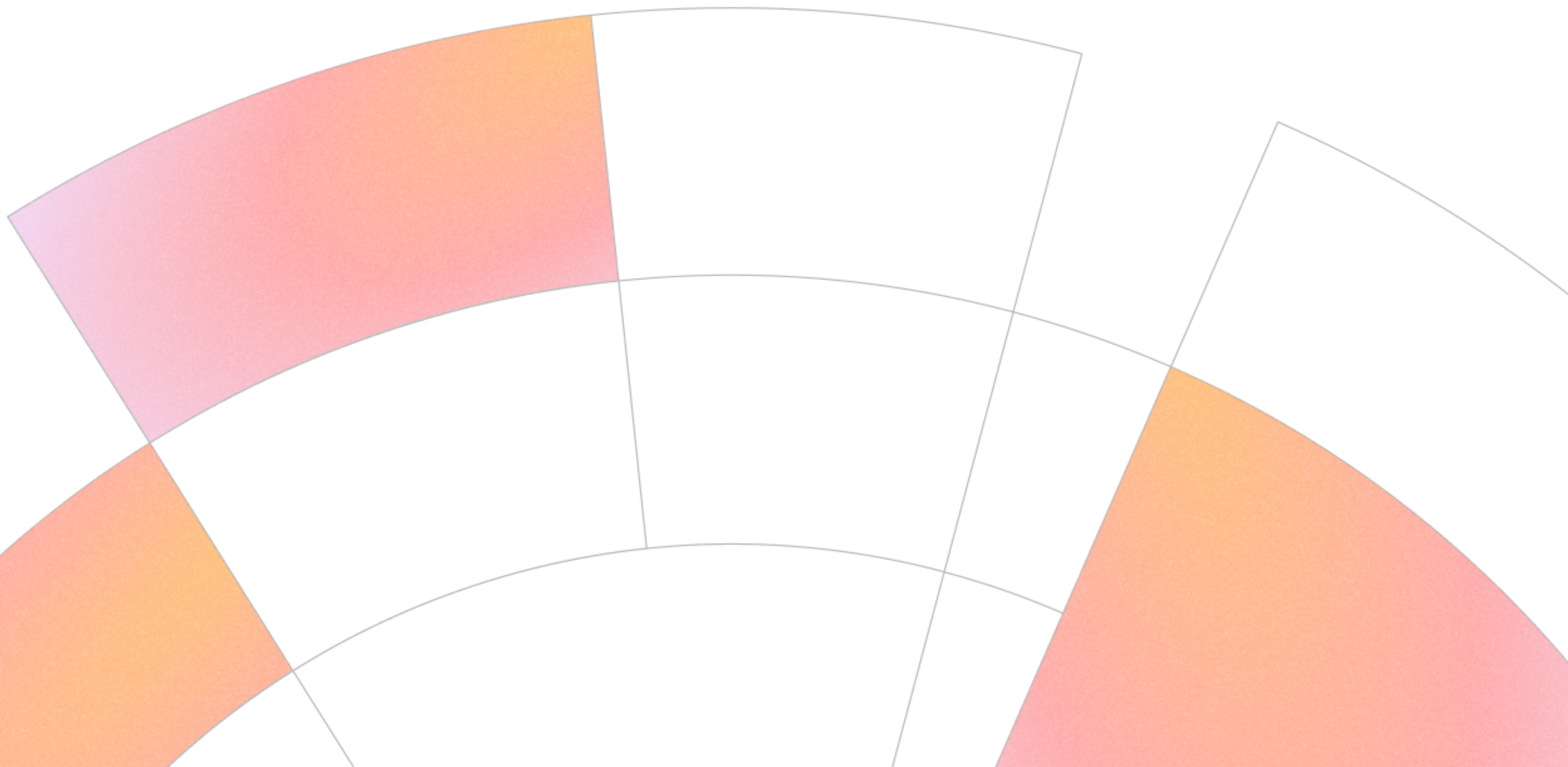
Democratizing Optimization

We believe optimization has the power to make the world a better place. So we've created some innovative, opensource tools that help get optimization into more people's hands—especially those without prior knowledge of optimization and mathematical modeling.

"When people and businesses make optimal decisions, they can do more with less—and, over time, that can make our world a better place. That's what we're aiming for as an organization."

Duke Perrucci

CEO, Gurobi





GUROBI MACHINE LEARNING

TURNING PREDICTIONS INTO OPTIMAL DECISIONS

With Gurobi Machine Learning, you can embed your trained regression model inside a gurobipy model—so you can make optimal decisions based on your predicted future.

GUROBI OPTIMODS

SIMPLE APIS FOR COMMON OPTIMIZATION TASKS

OptiMods, an open-source Python repository of optimization use cases, enables people to solve real-life optimization problems—with no modeling knowledge required.

GUROBOT

YOUR ALWAYS-ON EXPERT AGENT

Whether you need help troubleshooting your model, generating code snippets, or understanding your licensing or optimization best practices, Gurobot's got you covered.

GUROBI ALLIANCE PARTNERS

Trusted Experts, At Your Service

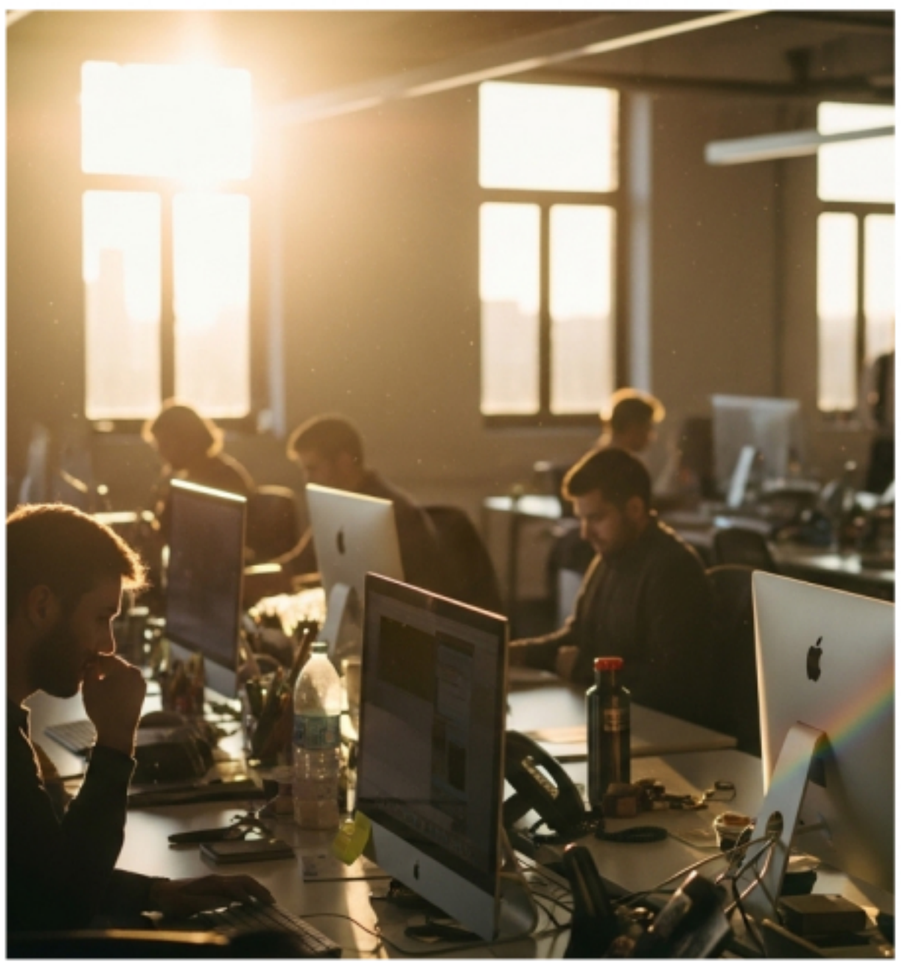
When you're facing a complex mathematical optimization project, turn to our Gurobi Alliance Partners. They'll be by your side, helping you succeed, no matter where you are on your optimization journey.

- Our partners get to know your business goals—and then create a solution that helps you meet those goals.
- Start optimizing faster and more effectively, by letting the experts guide your way.
- Solve your most complex business challenges—and realize the value of optimization, faster.



Current State
Assessments

Optimization
Feasibility Studies



Optimization Project
Assessments

Quick Start
Optimization Projects

Full Optimization
Implementation Projects



On-Site Training

Sign up for a
complimentary
working session.

Gurobi: Always Free for Academics (And Recent Graduates, Too!)

Whether for use in class or research, academics can use Gurobi Optimizer at no cost. Get all the same Gurobi features and performance, with no limits on model size.

Plus, through our Take Gurobi With You (TGWY) program, recent graduates can continue to get free, unrestricted access to Gurobi. This means they can bring the speed, scope, and problem-solving power of optimization with them into the workplace, using a tool they already know.

Over 500,000

Gurobi Academic Licenses Downloaded Since 2019

Learn more about the Gurobi Academic Program


CLASS OF 2024

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- Free benchmarking services
- Free model tuning services
- Free access to our world-class technical guidance and support

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