Ivan Rodin

Operations Research Engineer · Optimization Scientist

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PROFILE

Operations research engineer with 7+ years of building optimization software for logistics, crew scheduling and industrial planning. I combine mathematical modeling and solver expertise with Python development, validation and production integration, and I work with AI coding agents every day.

SKILLS

Optimization	LP/MILP, combinatorial and network optimization, routing, scheduling, rostering, decomposition, heuristics, local search, lexicographic objectives, infeasibility analysis
Solvers and frameworks	Pyomo, Gurobi, CPLEX, HiGHS, CBC, OR-Tools, Timefold, SAS/OR
Engineering	Python, SQL, pandas, NumPy, NetworkX, Shapely, FastAPI, Flask, Docker, Git, Linux; API integration, solution validation, benchmarking, performance profiling
AI-assisted work	Claude Code and Codex for research, algorithm prototyping, software development, debugging and documentation; MCP tools for optimization models (OR Lens)

EXPERIENCE

Optimization Engineer (contract) · Small optimization team Apr 2026 - present · Remote

- Weekly production planning for a food plant: a MILP over production centers, shared lines and stages of fixed length, through to the warehouses that ship, against sales and stock targets; deployed as an API service. In production.
- Warehouse and production network design for a logistics company: a MILP that opens plants and warehouses at each tier and routes flows from suppliers to customers, priced from a transport tariff database, with OSRM distances and VROOM/LKH delivery routing. In production.
- Built an AI agent that helps the analysts interpret model results.
- Generative floor plans for residential new builds: a chain of MILPs that turns an apartment mix into buildable floors across a whole complex (Pyomo, CPLEX, HiGHS, Gurobi).

Optimization Consultant · Independent, own clients Apr 2026 - present · Remote

- Multi-level MRP for a manufacturer: a multi-period MILP for purchasing and production at each stage and site, week by week, with supplier lead times, minimum orders, stock-cover targets and product changeovers. Stack: Pyomo, HiGHS, Gurobi.
- Develop my own tools and products: OR Lens, STOLP, Flatovo and Fruit Fall (see Projects).

Mathematical Optimization Developer · ARHITEX Jun 2023 - Apr 2026 · Remote / Serbia

- Developed fuel-delivery planning and re-planning algorithms under inventory, fleet, product compatibility, capacity, time-window and operational constraints.
- Combined MILP, decomposition, heuristics and local search for large industrial instances; evaluated solution quality and runtime, and tuned models and solvers.
- Implemented data validation, solution verification, diagnostics, profiling and integration layers. Additional projects included maritime routing (icebreaker planning, now in production), healthcare scheduling, mining planning and facility location.

Mathematical Optimization Developer · Rosterize Jul 2022 - Jun 2023 · Montenegro / Remote

- Developed air-crew rostering and retail workforce scheduling models, translating coverage, qualifications, labor rules and preferences into hard and soft constraints.
- Built Python/Pyomo solution procedures with CPLEX, Gurobi and HiGHS; diagnosed infeasibility and calibrated objectives and solver parameters.

Operations Research Scientist · OZON — Sep 2021 - Jun 2022 · Moscow, Russia

- Built a long-haul transportation network model for e-commerce logistics, jointly planning routes and movement schedules under capacity and timing constraints using Python, Pyomo and IBM CPLEX. Deployed to production.

Junior Consultant · SAS — Oct 2018 - Aug 2021 · Moscow, Russia

- Delivered optimization and forecasting pilots in banking, merchandising and operations, including collection planning, shift scheduling, routing and demand forecasting. Built analytical workflows, prepared specifications, presented results and trained customer teams.

PROJECTS

OR Lens · Local optimization workbench — `github.com/ivs-rodin/or-lens-plugin`

- A local MCP plugin for Codex and Claude Code with a browser workbench for LP/MPS models: sparse-matrix views, constraint and variable families by name, numerical diagnostics, independently checked solutions, infeasibility analysis and solver experiments with run records. Stack: Python, HiGHS, NumPy, SciPy; MIT.

STOLP · Pyomo infeasibility diagnostics — `gitlab.com/tarasov.alexey/stolp`

- Open-source Python library that explains infeasible Pyomo, LP and MPS models: finds minimal conflicting sets of constraints, first by constraint groups and then by single constraints, with a QuickXplain search on HiGHS, SCIP or any Pyomo solver, and reports what to switch off to restore feasibility.

Flatovo · Rental search product — `flatovo.rodn.dev/en`

- Built a live Belgrade rental aggregator combining listings from property portals and Telegram, with multilingual search, map browsing, filters, image-based deduplication and visual-preference ranking. Stack: Next.js, TypeScript, FastAPI, PostgreSQL/PostGIS/pgvector, SigLIP2 ONNX, Docker.

Fruit Fall · Mobile game in development

- A calm 2D physics merge puzzle for iOS with original hand-drawn art, built in Unity 6 and C# with AI coding agents.

EDUCATION

MSc (2021) and BSc (2019), Applied Mathematics and Computer Science, Operations Research · Lomonosov Moscow State University — 2015 - 2021

PUBLICATIONS

- A. F. Izmailov, I. S. Rodin. Accelerating sequential quadratic programming for inequality-constrained optimization near critical Lagrange multipliers. Advances in Systems Science and Applications 22(2), 2022, pp. 73-84.
- A. F. Izmailov, I. S. Rodin. Accelerating sequential quadratic programming near critical Lagrange multipliers (in Russian). Tikhonov Readings 2021, abstracts, Lomonosov Moscow State University, p. 110.
- D. Sumin, I. Rodin. MILP based approaches for scheduling double round-robin tournaments. Proceedings of PATAT 2021, vol. II.

COMPETITIONS

- 1st place, Ramaximization 2021 (RAMAX Group): a year of vacations for a large company.
- 3rd of 13 teams, International Timetabling Competition 2021 (sports timetabling); best known result on 16 of 45 instances.
- 3rd place, Leaders of Digital 2021: aircraft stand allocation.
- 3rd place, Leaders of Digital Transformation 2024: nuclear icebreaker route planning.

LANGUAGES

Russian (native), English (professional working proficiency)