

OR/AI Developer

Montréal / Temps plein / Hybride

Job Summary

Expretio is looking for an Operations Research / AI Developer to join its dynamic R&D team based in Montreal. As part of an AI team, you will contribute to the development of Appia, our flagship Revenue Management solution for the rail industry, by implementing and maintaining sophisticated mathematical optimization and forecast models.

As an OR/AI Developer, you will work independently to implement features in our mathematical programming models (revenue forecasting and optimization), translating complex business rules into precise optimization logic. You will collaborate closely with Data Scientists to integrate forecasting models with optimization systems, while ensuring that the solution meets operational constraints.

By balancing mathematical rigor with practical business constraints, you will play a crucial role in improving the efficiency of algorithms by ensuring that optimization solutions are both theoretically sound and operationally viable.

Key Responsibilities

Modeling and development

- Formulate and implement (in Java) optimization models for revenue and resource allocation
- Design and develop features in mathematical programming models
- Collaborate with AI developers to industrialize RO algorithms and pipelines
- Convert complex business rules and regulatory constraints into optimization logic
- Collaborate with the data science team to integrate forecasts into optimization
- Participate in the maintenance of features from previous versions of the application

Quality and technical excellence

- Write high-quality, high-performance code in accordance with coding and security standards
- Produce high-quality unit and integration tests
- Conduct constructive code reviews and validate mathematical modeling assumptions
- Participate in reducing technical debt and optimizing performance
- Collaborate with the quality assurance team on validations
- Collaborate with DevOps to maintain the CI/CD chain (GitLab, Jenkins)

Collaboration and communication

- Collaborate with customers to calibrate and adapt models to their needs and constraints
- Act as a point of contact to explain optimization behaviors
- Collaborate with the Support team to analyze and resolve production issues
- Participate in retrospectives and propose continuous improvements

What you bring to the role

Preferred Education and Experience

- Master's or PhD in operations research, applied mathematics, or a related field
- 3+ years of professional experience in optimization development
- Experience in mathematical programming and production systems
- 2+ years of professional experience in Java development
- 2+ years of experience in an Agile environment

Technical Skills

- Strong knowledge of Java 8 and 21+
- Expertise in mathematical programming and optimization models
- Experience with Python for research and prototyping work
- Advanced knowledge of different types of solvers (Google OR-Tools, CPLEX, GLOP, GLPK)
- Knowledge of network optimization, pricing algorithms, and constraint programming
- Advanced knowledge of artificial intelligence concepts, particularly machine learning
- Experience in designing high-performance, secure REST APIs
- Knowledge of SQL databases (PostgreSQL)
- Solid knowledge of software testing principles, methodologies, and best practices
- Ability to communicate effectively in French and English
- *Asset: Knowledge of NoSQL databases (MongoDB)*
- *Asset: Knowledge of build tools, continuous integration (Jenkins), and containerization (Docker)*

Other Key Skills and Competencies

- Natural curiosity and passion for solving complex mathematical problems
- Ability to understand the business domain and user needs
- Attention to detail and customer satisfaction
- Excellent communication skills to explain technical concepts
- Ability to work independently with rigor
- Excellent communication skills to explain technical concepts
- Proactivity and initiative

Technical Environment

- **Methodologies:** Agile (Scrum), Lean (Kanban)
- **Research:** Python, R, mathematical optimizers
- **Databases:** PostgreSQL, MongoDB
- **Backend:** Java 8/21+, Hibernate, REST, JUnit
- **Infrastructure:** Docker/Podman, GitLab, Jenkins, Linux (Fedora)
- **Tools:** IntelliJ IDEA, Pycharm, Office 365, Jira, Confluence, Miro

Reasons you'll love working with us

Great Work Environment and Experience: Expretio offers the best of both worlds: working for a market-leading small organization, where you can see the results of your efforts every day, while enjoying the benefit and opportunity of developing and growing personally and professionally in collaboration with and across our global eco-system (Modaxo/Volaris Group).

Health Benefits: Life Insurance, Short-Term, and Long-Term Disability Coverage as well as Medical, Dental, and Vision coverage for you and your family.

Financial Perks: Employee Stock Purchase Plan, Company Bonus Plan, Referral Bonus Program, Computer Purchase Plan, discounts for home/auto insurance, public transport contributions/discounts, and more.

Work-life balance: Company-paid Holidays, Vacation, and Personal Time Off. Flexible working hours policy. Wellness allowance. Work from home and from aboard options available (Some restrictions apply).

Professional Development: Employee education and development program that includes 100% tuition fees and book reimbursement (Some restrictions apply).

Office perks: Social events, complimentary beverages and snacks, team building events, and new and modern office space.

Employee Assistance: This program provides telemedicine, counseling and wellness services.

About Expretio

A Modaxo Group company, Expretio has more than a decade of advanced academic research in revenue and price optimization by world-renowned experts in Operations Research and Management Science.

At Expretio, we are 100% committed to the application of Revenue Management principles to the rail passenger transport industry. Our flagship product, Appia, is a powerful and highly adaptable Revenue Optimization and Customer Intelligence solution. Used by major rail operators who have seen significant improvements in revenue, passenger traffic, and yield, Appia is able to meet the demands of an increasingly dynamic and competitive railway industry.

Expretio Technologies provides state of the art, customized, high-performance revenue management and pricing solutions. We offer solutions in optimal inventory control, demand forecasting, and optimal pricing, as well as consulting services for analysis in specific areas or for strategic planning. Our unique technology allows our clients to explicitly consider their customers purchasing behavior, their competitor's reaction, as well as any business constraint.



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Expretio Technologies Inc.
4446 St Laurent Blvd
Suite 700
Montreal (Quebec) H2W1Z5
Canada

info@expretio.com
www.expretio.com
T. +1 (514) 392-1114
F. +1 (514) 504-2052