Lead AI Engineer

Requisition	R0000185460
Employer	Royal Bank of Canada
Canadian locations	Toronto (Ontario, Canada)
Primary address	600 QUEENS PLATE DR, TORONTO, ON M9W 0A4, Canada
Posted	October 26, 2026
Date in the description	August 26, 2026
Posted deadline	November 27, 2026
Last day to apply	November 26, 2026
Business area	TECHNOLOGY AND OPERATIONS
Employment status	Regular
Work schedule	Full time · 37.5 h per week
Pay type	Salaried

The position

We are seeking an accomplished Lead AI Engineer to design, develop, and implement AI-driven solutions within our software development lifecycle. You will lead enterprise-scale AI integration initiatives, establish best practices, and advance the technical maturity of our engineering organization. This role actively contributes to improving our Agile, Engineering, and DevOps practices.

This position demands exceptional problem-solving skills, deep AI expertise, and proficiency in modern development technologies (.NET/C#, Java, Python). You will effectively communicate and collaborate with engineering teams, business stakeholders, and senior management across multiple projects and organizational boundaries.

Lead AI Engineer

Role Level and Responsibilities

As a Lead AI Engineer, you are an expert professional with deep technical expertise who contributes to organizational objectives through innovative solutions to complex business challenges. Your primary focus is identifying root causes and implementing solutions to critical business problems while assessing and communicating the technological impact on the business.

Key Activities

- Evaluate enterprise software packages and AI platforms, recommending solutions to senior management
- Senior Collaborators and Mentors in AI Product Reviews, Pilot Projects and Technology Adoption
- Conduct a thorough analysis of the operational requirements of large-scale and mission-critical projects
- Conduct feasibility studies and translate complex requirements into robust technical designs
- Drive adoption of AI-driven practices across engineering teams

What You'll Do

AI Engineering & Implementation

- Lead the design and development of MCP servers and tools (Context Protocol Template) for seamless AI integration
- Design and implementation of AI-driven automation solutions, including LLM-powered automation, fast engineering and conversational AI

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- Develop ML model integration solutions and AI orchestration workflows with monitoring and evaluation
- Integrating UiPath with AI's corporate platforms and APIs
- Support the implementation of agent automation and advanced AI use cases

AI/ML Expertise & Governance

- Integrate LLM APIs and apply advanced and fast engineering techniques
- Design and maintain AI workflow orchestration systems
- Implement smart document and NLP processing solutions
- Develop evaluation, adjustment and governance frameworks
- Design and management of vector databases and RAG (Retrival-Augmented Generation) systems
- Supporting Responsible AI Practices and Governance Models

AI-Driven Software Development Lifecycle (SDLC)

- Implement AI spec-driven development practices for your squad
- Contribute to AI/ML solutions that improve code production, testing, deployment and monitoring
- Integrate AI technologies into existing SDLC workflows and development tools
- Collaborate on governance and responsible implementation of AI

Technical Leadership & Collaboration

- Lead technology evaluation and assessment for organizational adoption
- Collaborate with the business architecture, security and compliance teams on AI integration
- Contribute to technical training and knowledge sharing initiatives throughout the organization

What You Need to Succeed

Requirements

- 10 years and more experience in the construction and operation of production software at scale
- 2–4 years of hands-on experience with LLMs and generative AI in production environments
- Expert skills in the RBC careers portal#, Java, Python, SQL, Git and CI/CD
- In-depth knowledge of design models (MVC, MVVM), SOA and architectural concepts; practical development experience with Azure Integration Services
- Expert-level expertise in API architecture (REST/SOAP)
- Advanced knowledge of AI models: use of tools, agent orchestration, ReAct, multi-step reasoning, memory and context management
- Proven competence in LLM API integration, rapid engineering and RAG systems (vectorial databases, anchors, recovery strategies)
- Demonstrated experience in designing and building MCP servers and tools with agent-tool integration frameworks
- Cloud platform expertise (AWS, Azure or GCP), including containers (Docker/Kubernets) and CI/CD pipelines
- Strong capacity for collaboration and communication; comfortable with code reviews, design discussions and pair programming
- Ability to communicate technical decisions clearly to technical peers and business stakeholders
- Understanding of practices in security, data governance and responsible AI

Assets

- Experience in advanced AI automation and AI solutions in production
- Contributions from open sources to automation or AI/ML projects
- Microsoft Azure Certification (Associated with Azure Developer or Azure Solutions Architecture Expert)
- Experience in building and training machine learning models (regression, classification, consolidation) using frameworks such as Scikit-learn, TensorFlow, or PyTorch

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Pay and benefits

We thrive on the challenge to be our best, embrace progressive thinking, and work together to deliver trusted solutions that help our clients and communities prosper. We are committed to supporting each other's growth and creating mutual success.

- Total total premium program, including competitive remuneration, premiums, flexible benefits, commissions and stock options, where applicable
- Development-oriented leadership, committed to your growth through coaching and career opportunities
- Opportunity to make a meaningful, lasting impact on enterprise AI adoption
- Dynamic, collaborative and efficient team environment
- World-class financial services and emerging technologies training programmes

Job Skills

Application Development, Application Integrations, Application Maintenance, Application Architecture, Retail-Oriented, Enterprise Application Delivery, Group Problem Resolution, Programming Languages, Software Development Life Cycle (SDLC), System Applications

RBC accepts applications until 11:59 p.m. on the day before the posted deadline.

Our Employment Opportunities

RBC works as One RBC and follows five shared values: putting clients first, integrity, collaboration, respect and excellence. As one of the world’s largest and most successful banks, it sees inclusion and different perspectives as important to continued growth. RBC supports staff in doing their best work, working together, innovating and developing professionally. Its policies and programs foster respect, belonging and opportunities for everyone to create value for clients and communities.

Talent community

People who join RBC’s talent community can receive new postings, career advice and recruitment event updates tailored to their interests.

RBC’s careers portal shares information about career paths and how its teams contribute to client and community well-being.

RBC is accepting applications for an existing vacancy. Qualified applicants may hear from the recruitment team for a more detailed review of their résumé.

Search for requisition R0000185460 on the RBC careers portal.

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