Principal AI Engineer, AI DLC Platform

Requisition	R0000190660
Employer	Royal Bank of Canada
Canadian locations	Toronto (Ontario, Canada)
Primary address	600 QUEENS PLATE DR, TORONTO, ON M9W 0A4, Canada
Posted	October 19, 2026
Last day to apply	November 26, 2026
Posted deadline	November 27, 2026
Business area	TECHNOLOGY AND OPERATIONS
Employment status	Regular
Work schedule	Full time · 37.5 h per week
Pay type	Salaried

The position

The AI-DLC platform integrates the AI, agentic, and managed, in RBC's life cycle of software development – skills, controls and guardrails covering discovery, construction, testing and security, and now operating in real deposits. The next step is to move from a governed foundation (approved by the human, A0–A2) to hybrid skills and agents, and finally to a software plant, with added autonomy only when the evidence confirms it.

As Principal AI Engineer you will own the technical direction of that journey. You will define the platform architecture, the production boundary between code that runs in production and agents that run in production, and the standards, pipelines and runtime that make AI-assisted delivery auditable, reproducible and safe at enterprise scale. You will provide technical leadership across multiple squads and domains, advise senior leadership on AI-DLC architecture and engineering, and be accountable for the adoption and measurable business impact of the platform.

This role is suitable for a technical leader who combines AI and platform engineering skills with judgment to work with partners in risk, governance and engineering and to turn policy into something that can be tested.

Responsibilities

- Own the AI-DLC Platform architecture (skills, commands, agents, context layer, MCP services, governance) and define the 12–18 month technical roadmap from governed foundation through hybrid skills/agents to software factory.
- Define the autonomy model (A0 and beyond) with the necessary evidence, controls and approvals before capabilities become self-sufficient.
- Make construction-purchase-purchase and high-impact supplier decisions for AI tools, models and infrastructure; evaluate open-source compromises against proprietary compromises.
- Maintain the Harness validation promotion pipeline through Helios deployment; ensure that the code generated by AI is verifiable, reproducible, explainable and traceable to specifications and instructions.
- Define and enforce the boundary between the AI-generated code and the authorized production officers; codify the governance policy with the risk management and engineering teams.
- Establish coding standards and development practices based on specifications (Specific Box, OpenSpec) so that AI production is structurally sound before human examination.
- Design and build multi-agent workflows with orchestration frames (LangGraph, CrewAI, AutoGen) including tool usage, memory, planning, guardrails and human models in the loop.

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- Design tool contracts, APIs (FastAPI/gRPC) and MCP services so skills and agents are versioned and governed; build and operate the runtime with containerization, orchestration, scaling and observability. Engineer reliability into production systems through circuit breakers, graceful degradation, rollback and zero-downtime deployment; establish LLMOps including evaluation, governance, RAG strategy and cost/latency optimization.
- Build a monitoring and alert system that distinguishes bad models, code problems and platform problems; use AI to automatically generate test cases and validation checks; and define the competency assessment framework and certification officers.
- Implement access controls, audit trails and human validation in the loop; establish SLA and reliability objectives; and assess technical risks of AI initiatives.
- Be responsible for adopting the platform, results and ROI; define and monitor RCIs (cycle time, quality, safety, use) and report to senior management.
- Advise and present to executive steering committees on AI-DLC architecture, direction, progress and impact; partner with cohort teams to drive adoption.
- Lead architecture design, code reviews and technical discussions; mentor engineers, participate in hiring and define competency frameworks for AI engineers.
- Document and share the platform's knowledge; represent the platform in internal and external forums.

Qualifications

Requirements

- AI Architecture: proven expertise in designing and orchestrating autonomous agents in several stages with the use of tools, memory, planning, guardrails and human models in the loop; practical competence with LangGraph, CrewAI or AutoGen in production environments.
- LLM and LLMOps Engineering: Advanced expertise in rapid scale engineering, RAG and context management, evaluation frameworks, cost/latency optimization and life cycle management of production models.
- Tools and Data Integration: Strong tool contract design capability, API (FastaPI/gRPC) and MCP connections
- IC/CD and infrastructure: Demonstrated mastery of CI/CD pipelines, container orchestration (Docker/Kubernets) and infrastructure-as-code; proven work with business platforms (e.g. OpenShift, Kafka, Elasticsearch, Apigee) and cloud providers (AWS, Azure, GCP).
- Specification-based development: Ability to translate user stories and requirements into precise specifications for automated execution; knowledge of frames such as spec-kit or OpenSpec.
- Automated and QA tests: Competency using AI to generate tests, analyze logs and perform validation checks; automation of scalable tests of fund building.
- Governance and Security: Demonstrated ability to design human validation in the loop, access controls and audit trails for automated systems; ability to codify policy into verifiable controls.
- Software engineering depth: Python, Java or C++ skills with solid engineering fundamentals.
- Strategy and business sense: Ability to translate technical capabilities into operational results and ROI; definition of technical roadmaps and influence investment decisions; and an assessment of AI initiatives with measurable impact on the company.
- Leadership: Track record of advising VP+ leadership, presenting to steering committees, leading cross-functional work across multiple squads and domains, and hiring and developing engineering talent.
- Education: Bachelor or Master's degree (PhD) in computer science, engineering, mathematics or related fields, or equivalent experience.

Assets

- Understanding of financial services and their regulatory and risk context.
- Experience with learning reinforcement, autonomous agents or other advanced AI techniques.
- AI/ML certifications, open access contributions or publications; industry leadership in thinking.

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Pay and benefits

RBC teams aim to grow by working together, thinking ahead and giving dependable advice that helps clients and communities prosper. They support one another, develop their potential and strive for outcomes that benefit the communities they serve as well as the bank.

- A total compensation program with competitive pay, bonuses and flexible benefits, plus commissions and stock where applicable.
- Managers who coach employees and help them find opportunities to develop.
- Capacity to make a difference and sustainable impact
- Join a collaborative team that works at a high standard and looks for new ways to improve.
- Flexible work/life balance options
- Opportunities to do challenging work
- Opportunities for progressively fulfilling greater responsibilities
- Access to a variety of job opportunities across business

Job Skills

Agentic AI, Agentic Design, Agentic Orchestration, Agentic Platforms, AI Agents, AI Architecture, AI Concepts, AI Frameworks, AI Governance, AI Platforms, AI Programming, Big Data Analytics, Customer Advice, Coaching Others, Critical Thinking, Decision Making, Industry Knowledge, Machine Learning (ML), Result-Oriented, Software Architectures, Life Cycle Software Development (SDLC) Methodology, Software Engineering, Software, Measurement Software, Product Design Software, Reengineering Software

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 R0000190660 on the RBC careers portal.

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