Lead AI Engineer, Conversational & Agentic AI

Requisition	R0000193128
Employer	Royal Bank of Canada
Canadian locations	Toronto (Ontario, Canada)
Primary address	600 QUEENS PLATE DR, TORONTO, ON M9W 0A4, Canada
Posted	November 26, 2026
Last day to apply	December 10, 2026
Posted deadline	December 11, 2026
Business area	TECHNOLOGY AND OPERATIONS
Employment status	Regular
Work schedule	Full time · 37.5 h per week
Pay type	Salaried

The position

RBC is hiring Lead AI Engineers to build the conversational and agentic AI that serves our clients and employees. You'll design LLM agents that plan, call tools, and work securely with core banking systems, then own them in production: evaluation, observability, guardrails, and iteration. The role combines hands-on engineering with data science rigour and technical leadership in a regulated environment. If you've shipped LLM or agent systems to production and kept them running after launch, we want to talk to you.

Responsibilities

We're growing RBC's conversational and agentic AI capabilities, which include virtual assistants, voice interfaces, and LLM-based agents that complete multi-step tasks for clients and employees. As a Lead AI Engineer, you'll set technical directions, build production systems, and make sure they are measurable, secure, and compliant. You'll write code, lead design reviews, and mentor engineers and data scientists.

-Agentic systems

- Design and build LLM agents that plan, reason and act through tools and functions calling through the basic APIs of the bank, CRM and knowledge base.
- Architects single agent and multiple agent workflows using frameworks such as LangGraph, including state management, memory, retrigues and human fund transfers in the loop.
- Build and integrate tools and services through the Model Context Protocol (MCP) and secure internal APIs.

-Conversational AI

- Build and improve intent recognition, entity extraction, and dialogue orchestration for chat and voice channels.
- Design RAG pipelines: chunking, embeddings, retrieval, reranking, and grounding, using vector databases.
- Implement guardrails, fallback handling, and escalation to human agents.

-Data science and evaluation

- Create offline and online evaluation frameworks, including A/B tests, significance tests and metrics for agent conversations and trajectories (task success, precision of tool calls, step effectiveness, cost).

-Observability and LLMOps

- End-to-end observability: Distributed tracking of each stage of the pipeline (railway guard, LLM calls, tool calls, cache, downstream API), structured recording with PII editing, measurements and alerts.
- Track quality, latency (p95/p99), error rates, containment, escalation, and guardrail outcomes in production. Use traces to debug regressions and feed evaluation datasets.

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- Stack: OpenTelemetry, Traceloop/OpenLLMetry, Langfuse, MLflow, Arize Phoenix, promptfoo and Dynatrace.

-Governance, risk and compliance

- Make sure solutions meet RBC's privacy, security, and responsible AI standards, along with OSFI and other regulatory requirements.
- Work with Risk, Legal, and Compliance to validate model and agent behaviour, including red-teaming, bias mitigation, and auditability of agent actions.

Qualifications

Requirements

- 8 years and over in software engineering or ML, including 3 years and over in conversational applications of AI, NLP or LLM.
- Practical experience building LLM agents with tool and function calls, and frameworks of agents such as LangGraph, LangChain, SDK OpenAI Agents, or similar.
- High skills in python and production engineering: API, async, test, CI/CD.
- Solid earthing in statistics and experimental design: A/B tests, significance tests and metric design.
- Experience in model development: classification, consolidation, integration, transformers and fine tuning.
- Experience in RAG architectures, vector databases and MLOps/LLMOps.
- Cloud experience with Azure, AWS or GCP.

Assets

- A record of the dispatch of AI, LLM or agents to production and possession of these after launch, including surveillance, incident response and iteration.
- Experience in the evaluation and red team of LLM agents, and with guardrails such as NeMo Guardrails.
- NVIDIA AI battery: NIM, Nemotron, NeMo, Triton Inference Server, and TensorRT-LLM.
- Experience with MCP servers and clients, or with building tool ecosystems for agents.
- Experience in financial services or another regulated industry, and familiarity with OSFI Guideline E-23 and responsible AI frameworks.
- Interpretability and fairness tooling, such as SHAP, fairness metrics, and bias audits.
- Experience in labelling programs and construction data pipelines from conversational logs.
- Bilingual (English/French) NLU experience.
- Master's or doctoral degree in computer science, statistics, machine learning or related fields, or equivalent experience.

Pay and benefits

Join a team that values innovation and collaboration. You'll have the opportunity to work on exciting projects with modern technologies, grow your skills, and make a significant impact. We offer a supportive work environment and a chance to be part of a forward-thinking organization.

Job Skills

Information Technology (IT) Infrastructures, Programming Languages, Software Change Request Management, Software Development Life Cycle (SDLC), Software Engineering, Software Integration, Software Product Design, Software Product Technical Knowledge, Software Version Management, System Test Tools

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.

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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 R0000193128 on the RBC careers portal.

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