TORONTO
AI SCHOOL

Toronto AI School

Master Program in Generative AI & Agent Engineering

Week 1 - Foundations of Generative AI

Session	Topics Covered
Day 1 - Generative AI Landscape	- Evolution of generative AI systems - Generative AI vs traditional machine learning - Transformer architecture overview - Large Language Models fundamentals - Enterprise applications of generative AI - North American AI startup ecosystem - Case Study: OpenAI & Microsoft Copilot ecosystem - Case Study: Amazon generative AI in e■commerce
Day 2 - Prompt Engineering Fundamentals	- Prompt design principles - Instruction prompts vs role prompts - Chain of thought prompting - Few shot prompting strategies - Prompt debugging techniques - Prompt evaluation frameworks - Case Study: Customer support automation using prompts - Case Study: AI marketing assistant for Shopify businesses
Day 3 - AI Business Opportunities	- Identifying AI product opportunities - Building AI powered businesses - AI consulting models in North America - Automation agencies using AI - AI SaaS monetization models - AI startup case study analysis

Week 2 - Advanced Prompt Engineering

Session	Topics Covered

Day 1 - Prompt Architecture	- Prompt pipelines - Structured prompting - JSON prompting - Tool calling prompts - Prompt chaining - Prompt reliability testing
Day 2 - Enterprise Prompt Design	- Prompt templates for businesses - Multi role prompt systems - AI copilots design - Prompt safety and guardrails - Handling hallucinations
Day 3 - Case Studies	- TD Bank customer support assistant - Healthcare triage chatbot - Legal document summarization system - Retail product recommendation assistant

Week 3 - Retrieval Augmented Generation (RAG)

Session	Topics Covered
Day 1 - Vector Databases	- Embeddings fundamentals - Semantic search - Vector database architecture - Document indexing pipelines - Knowledge retrieval systems
Day 2 - Building RAG Systems	- Enterprise document AI - Knowledge assistants - Customer support knowledge bots - Hybrid search architectures
Day 3 - Case Studies	- Hospital knowledge assistant - Enterprise internal knowledge search - Insurance policy AI assistant

Week 4 - AI Agents & Agent Engineering

Session	Topics Covered
Day 1 - Agent Architectures	- Autonomous agents - Planning and reasoning agents - Agent memory systems - Agent orchestration
Day 2 - Multi Agent Systems	- Collaborative agents - Task delegation agents - AI workflow orchestration - Agent security considerations
Day 3 - Case Studies	- AI sales automation agents - AI marketing automation systems - AI research assistants

Week 5 - AI Workflow Automation

Session	Topics Covered
Day 1 - Business Automation	- Automation design frameworks - AI workflow architecture - Event driven automation - Enterprise automation systems
Day 2 - Automation Tools	- Zapier AI automation - Make.com AI workflows - Custom automation pipelines - Automation for SMB businesses
Day 3 - Case Studies	- AI automation for dental clinics - AI automation for pharmacies - AI automation for logistics companies

Week 6 - Multimodal AI

Session	Topics Covered
Day 1 - Vision Language Models	- Multimodal architecture - Vision understanding systems - Cross modal reasoning - Multimodal embeddings
Day 2 - Voice AI Systems	- Speech recognition - Voice assistants - Emotion detection - Call center automation
Day 3 - AI Video and Avatars	- AI avatar generation - Video AI assistants - AI content generation pipelines

Week 7 - AI Product Development

Session	Topics Covered
Day 1 - AI SaaS Development	- AI SaaS architecture - API based AI products - Building AI startups
Day 2 - AI Development Tools	- Cursor AI coding - Lovable AI development - Rapid prototyping AI tools
Day 3 - Case Studies	- AI SaaS for marketing automation - AI SaaS for real estate lead generation - AI SaaS for financial analysis

Week 8 - MLOps for Generative AI

Session	Topics Covered

Production Systems	- Deploying LLM systems - Scaling AI infrastructure - Monitoring AI systems - AI performance optimization

Week 9 - Responsible AI & Security

Session	Topics Covered
AI Governance	- AI ethics - Bias detection - Security of AI agents - Responsible AI frameworks

Week 10 - Capstone Projects

Session	Topics Covered
Industry Projects	- AI enterprise assistant - AI customer support agent - AI automation platform - AI generative marketing system