Manager, Quality Engineering & GenAI Solutions for QE

Summary of This Role

Leads comprehensive quality engineering practices while developing and implementing custom GenAI solutions specifically designed to support quality assurance capabilities across the organization. Performs dual expertise as both quality engineering management leader and GenAI solutions developer, designing, building, and implementing large language model applications that solve quality engineering challenges. Manages cross-functional teams while personally developing GenAI prototypes and creating production-ready AI solutions for testing automation, quality analytics, and intelligent quality workflows. Combines deep quality engineering leadership with hands-on GenAI development expertise to create practical solutions that enhance how quality assurance is executed. Acts as both strategic quality engineering leader and technical GenAI developer, building custom AI solutions that deliver measurable improvements in testing efficiency, defect detection, and quality outcomes.

What Part Will You Play?

- **Quality Engineering Leadership & Strategic Management**: Lead and manage comprehensive quality engineering teams, establishing quality standards, frameworks, and best practices across the software development lifecycle. Oversee traditional quality engineering activities including test planning, automation strategy, defect management, and quality metrics analysis. Manage team performance, conduct strategic planning for quality initiatives, and ensure delivery of high-quality software products. Drive adoption of quality engineering best practices while identifying opportunities where custom GenAI solutions can enhance existing quality processes and methodologies.

- **GenAI Solutions Development & Technical Implementation**: Develop end-to-end GenAI solutions specifically tailored for quality engineering challenges, designing practical applications that integrate large language models with existing quality tools and workflows. Create technical implementations for custom LLM applications including prompt engineering frameworks and RAG (Retrieval-Augmented Generation) implementations for quality knowledge bases. Build practical GenAI-powered testing platforms, intelligent quality analytics systems, and automated quality workflow solutions. Establish technical standards and best practices for GenAI solutions deployment in quality engineering contexts.

- **Hands-On GenAI Development & Implementation**: Personally develop and implement custom GenAI solutions for quality engineering applications including automated test case generation, intelligent defect analysis, and AI-powered quality reporting systems. Build production-ready LLM applications using frameworks like LangChain, LlamaIndex, and custom prompt engineering solutions. Implement RAG systems for quality knowledge management and create conversational AI

interfaces for quality workflows. Write production code for GenAI integrations with testing tools, CI/CD pipelines, and quality management platforms.

- **Model Training & Fine-Tuning for Quality Applications**: Design and execute model training strategies for quality-specific GenAI applications, including fine-tuning large language models on quality engineering datasets. Develop training datasets from test cases, defect reports, requirements documents, and quality artifacts. Implement model evaluation frameworks to assess GenAI solution performance for quality engineering tasks. Optimize model performance through advanced prompt engineering, few-shot learning techniques, and custom training approaches tailored to quality engineering domain knowledge.

- **Quality Engineering Process Innovation Through GenAI**: Identify quality engineering pain points and design custom GenAI solutions to address specific challenges such as automated requirements analysis, intelligent test planning, and predictive quality analytics. Develop GenAI-powered automation for quality documentation, test case maintenance, and defect triage processes. Create intelligent quality coaching systems that provide real-time guidance to quality engineers and developers. Implement AI-driven quality gates that adapt dynamically based on project context and historical quality data.

- **GenAI Integration & Technical Leadership**: Lead technical integration of custom GenAI solutions with existing quality engineering tools including test management systems, automation frameworks, and CI/CD pipelines. Develop APIs and microservices for GenAI solution deployment, ensuring scalability, security, and maintainability. Oversee cloud infrastructure setup for GenAI solutions including model hosting, vector databases, and real-time inference systems. Provide technical leadership for GenAI implementation best practices, security considerations, and performance optimization strategies.

- **Data Engineering & Quality Intelligence Systems**: Design and implement data pipelines for quality-related datasets that support GenAI solutions, including test execution data, defect patterns, and code quality metrics. Build quality intelligence systems that leverage GenAI for predictive analytics, trend analysis, and automated insights generation. Develop embedding strategies for quality artifacts including test cases, requirements, and defect reports to enable advanced AI-powered search and analysis capabilities. Create data governance frameworks for quality data used in GenAI applications.

- **Team Development & Technical Mentoring**: Manage and develop quality engineering teams while providing technical mentoring in both traditional quality practices and emerging GenAI capabilities. Build team competencies in prompt engineering, GenAI tool utilization, and AI-enhanced quality workflows. Foster innovation culture that encourages experimentation with GenAI solutions for quality challenges. Provide hands-on guidance for team members learning to integrate GenAI tools into their quality engineering practices.

- **Stakeholder Communication & GenAI Solution Evangelism**: Communicate the value and impact of custom GenAI solutions to senior management, demonstrating ROI through improved quality metrics and operational efficiency. Facilitate cross-functional collaboration with development teams, product managers, and infrastructure teams for GenAI solution deployment. Present technical concepts and business value of GenAI quality solutions to both technical and non-technical stakeholders. Build consensus and drive adoption of custom GenAI solutions across quality engineering and development organizations.

- **Quality Engineering Excellence & Continuous Innovation**: Maintain expertise in traditional quality engineering methodologies while continuously innovating through GenAI solution development. Conduct impact analysis of GenAI solutions on quality outcomes, measuring improvements in defect detection, testing efficiency, and overall quality metrics. Drive continuous improvement of both quality engineering practices and GenAI solution capabilities through iterative development and feedback integration. Establish center of excellence for GenAI-enhanced quality engineering within the organization.

What Are We Looking For in This Role?

Minimum Qualifications

- Bachelor's Degree in Software Engineering, Information Systems, Computer Science, or other Technical degree; additional relevant experience in lieu of degree will be considered

- Typically Minimum 10+ Years Relevant Experience in software testing, quality engineering, coding, designing, and developing with proven track record in quality leadership

- Typically Minimum 5+ Years People Management Experience leading technical teams in quality engineering or software development domains

- Typically Minimum 3+ Years Hands-On Experience in GenAI development, including LLM application development and prompt engineering

- Extensive hands-on testing experience across multiple testing types (functional, performance, security, API, mobile testing) with automation expertise

- Proven experience in architecting and developing production-ready GenAI solutions using frameworks like LangChain, LlamaIndex, or similar platforms

- Strong programming skills in Python with experience in GenAI libraries (transformers, langchain, openai, anthropic APIs)

- Demonstrated experience in team leadership, people management, and technical mentoring in fast-paced technology environments

- Experience with cloud platforms (AWS, Azure, GCP) and infrastructure setup for AI/ML workloads

Preferred Qualifications

- Master's Degree in Software Engineering, Computer Science, AI/ML, or related Technical field
- Typically Minimum 12+ Years Relevant Experience combining quality engineering leadership with hands-on AI/ML development
- Experience in developing and deploying custom LLM applications in production environments
- Leadership certification with focus on technology innovation and team development
- Professional certifications in both quality engineering (ISTQB) and cloud AI platforms (AWS ML, Azure AI, GCP ML)
- Publication record or speaking engagements on quality engineering innovation or GenAI applications
- Experience with vector databases, embedding models, and RAG system implementation

What Are Our Desired Skills and Capabilities?

Skills / Knowledge: Senior technology leader with unique combination of deep quality engineering expertise and advanced GenAI development capabilities, using both domains to create innovative solutions that solve complex quality challenges. Demonstrates expert-level understanding of quality engineering methodologies combined with advanced GenAI technical skills and solution development experience.

Job Complexity: Manages complex quality engineering initiatives while simultaneously architecting and developing sophisticated GenAI solutions, requiring deep technical evaluation across both quality engineering and AI development domains. Exercises advanced judgment in both quality strategy and GenAI technical architecture decisions, balancing traditional quality excellence with innovative AI solution development.

Supervision: Manages and develops quality engineering teams while providing technical leadership in GenAI solution development, determines strategic direction for both quality engineering practices and AI innovation initiatives. Provides dual-expertise mentoring in quality engineering excellence and GenAI technical development while driving organizational capability building in both domains.

Technical Skills Required:

- **Quality Engineering Expertise**: Agile (Scrum, Kanban), Test Driven Development (TDD), Behavior Driven Development (BDD), test automation frameworks, CI/CD integration, quality metrics and analytics
- **GenAI Development & Implementation**: Python, LangChain, LlamaIndex, OpenAI API, Anthropic Claude API, Hugging Face Transformers, prompt engineering, RAG implementation

- **Programming & Development**: Python, JavaScript, SQL, REST APIs, microservices architecture, cloud-native development, version control (Git), DevOps practices
- **AI/ML Infrastructure**: Vector databases (Pinecone, Weaviate, Chroma), embedding models, model hosting and inference, model monitoring and evaluation
- **Cloud Platforms**: AWS (Bedrock, SageMaker, Lambda), Azure (OpenAI Service, Machine Learning), Google Cloud (Vertex AI), containerization (Docker, Kubernetes)
- **Testing Tools & Integration**: Selenium, Cypress, API testing tools, performance testing tools, test management platforms, CI/CD pipeline integration
- **Data Engineering**: Data pipeline development, ETL processes, database design, data governance, analytics and reporting frameworks
- **Test Management Tools**: Jira, TestRail, Zephyr, qTest, Azure DevOps, Rally, HP ALM/Micro Focus ALM, Xray, TM4J, or other test case management and test execution platforms

Leadership & Innovation Skills:

- Exceptional people management with focus on technology innovation and capability building in both quality engineering and GenAI domains
- Executive-level communication demonstrating business value of both quality engineering excellence and GenAI solution innovation
- Strategic planning for quality engineering transformation through custom GenAI solution development and deployment
- Cross-functional collaboration bridging quality engineering, development, AI/ML, and infrastructure teams
- Technical thought leadership in both quality engineering best practices and GenAI solution architecture

Unique Dual-Expertise Capabilities:

- Advanced understanding of both quality engineering lifecycle and GenAI solution development and deployment
- Hands-on development experience in building production-ready GenAI applications for quality engineering use cases
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- Strategic thinking for quality transformation through custom AI solution development rather than vendor tool adoption

- Innovation management combining proven quality engineering practices with cutting-edge GenAI technical capabilities

Additional Capabilities:

- Deep experience with quality metrics enhanced through custom GenAI analytics and intelligent reporting solutions
- Knowledge of AI governance, model security, and compliance requirements for enterprise GenAI solution deployment
- Continuous learning mindset with ability to stay current with rapidly evolving GenAI technologies while maintaining quality engineering excellence
- Strategic leadership experience with understanding of both quality engineering business value and GenAI solution development ROI
- Technical expertise in building scalable, maintainable GenAI solutions that integrate seamlessly with enterprise quality engineering workflows