MEDICAL
COLLEGE
OF WISCONSIN

APPLY ONLINE

Position Summary

Sr. Data Engineer – Enterprise Programmer Analyst II

Purpose
Prepare and transform data for analytical, operational, and intelligent automation uses to support diverse stakeholder needs throughout the Center for International of Blood and Marrow Transplant Research (CIBMTR) , including statisticians, data scientists, scientific directors, and CIBMTR partners. Design, develop, and implement data- and AI-centric solutions aligned with evolving user needs—leveraging structured and unstructured data, optimizing data quality, and enabling scalable Machine Learning and Agentic Artificial Intelligence (AI) systems.

Primary Functions
- Lead or actively contribute to multidisciplinary data and AI workstreams, collaborating with data scientists, analytics engineers, and partner engineering teams to design and build next-generation intelligent data solutions.
- Design and implement modern, scalable, secure, high performing data architectures, including data lakes, lakehouse and data commons.
- Develop and optimize data pipelines (ETL/ELT) and orchestration systems for large scale data ingestion and processing of structured and unstructured data as well as integrating organizational data for ML/AI workloads for analytics and ML/AI applications.
- Build reusable, modular components and APIs to support scalable Agentic AI frameworks and enable autonomous data operations aligned with outcomes research and clinical trials.
- Work independently or as part of a team with subject matter experts to identify user needs and requirements for efficient, scalable and reliable data pipelines and models that support data-driven initiatives.
- Support automation of operational workflows using Agentic AI, including evaluation, performance tuning and observability.
- Develop and maintain clear documentation aligned with Standard Operating Procedures (SOPs), best practices, and regulatory requirements for both data engineering and AI components.
- Mentor and train data engineers and analytics engineers in the adoption and integration of AI and ML methods and frameworks.
- Perform other duties as required.

Knowledge – Skills – Abilities
- Experience in designing, implementing, and scaling data pipelines for structured and unstructured data in modern Lakehouse or data lake architectures.
- Strong proficiency in SQL and at least one scripting language (e.g., Python).
- Solid understanding of data engineering principles, including data preparation, feature engineering, and model lifecycle management.
- Solid understanding of prompt engineering.
- Experience with cloud-based AI/ML platforms (e.g., AWS SageMaker, Bedrock, or comparable).
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- Familiarity with LLMs, agentic frameworks, and AI orchestration patterns (e.g., LangChain, AutoGen, or similar).
- Familiarity with techniques to integrate organizational data into AI workflows, such as Retrieval Augmented Generation (RAG).
- Strong data profiling and data quality assurance experience.
- Knowledge of workflow decomposition for automation.
- Excellent problem-solving, analytical thinking, and communication skills.
- Ability to mentor technical staff and communicate data engineering and AI concepts to non-expert audiences.

Preferred:
- Knowledge of data interoperability and data standards (e.g., FHIR, HL7, JSON, XML).
- Experience with Agentic AI reasoning patterns and system frameworks.
- Experience working in AGILE Scrum team framework.
- Familiarity with orchestration tools (e.g. Airflow or Dagster).
- Familiarity of R, SAS, JupytrLab or other statistical software is a plus.
- Experience with Model Context Protocol (MCP), RESTful APIs and modern integration methods.
- Familiarity of model evaluation and observability.

Specifications:
Appropriate experience may be substituted on an equivalent basis.
Minimum Required Education: Bachelor's Degree
Minimum Required Experience: 5 years
Preferred Education: Master's degree
Preferred Experience: 8 years
Field: Computer Science, Informatics, Data Science, or technical discipline in healthcare or life sciences
Certification: None required; AI/ML certifications preferred

Organizational Structure
Building: Center for Cancer Discovery
Department: CIBMTR
Division:
Reports to (Title):   Principal Data Engineer
Direct Reports (Titles):   NA
Collaborates with (Titles):   CIBMTR Medical College of Wisconsin (MCW) and National Marrow Donor Program (NMDP) Biostatisticians, Project Management Office, IT, and Scientific Directors

Classification
Grade Name   19
Full-Time Equivalent   1.0
FLSA Status   Exempt
FLSA Test   Computer Professional
Workweek   Full-time role with expectations for coverage during core business hours

and flexibility required as necessary to accommodate business needs.

Job ID
Job Name   Enterprise Programmer Analyst II
Position Category   Information Services

Job Scope
Complexity – requires sound judgment; leads difficult and involved planning of initiatives
Impact – errors may result in extensive damage; constant attention to accuracy required
Autonomy – individual responsible for completion of work; seeks supervision as appropriate
Communication – involved in frequent conflict resolution; communicates with senior leaders
Responsibility – influences others
Confidentiality – confidential information used frequently to make decisions
Leadership – prioritizes work of others or may provide supervision

Physical Requirements
Work requires infrequent physical effort such as walking or retrieving materials.

Risk Potential
Little or no exposure to hazards such as dust, fumes, or extreme temperatures, airborne or blood borne pathogens, extreme temperatures, or allergens.

Sensory Acuity
Ability to detect and translate speech or other communication required. May occasionally require the ability to distinguish colors and perceive relative distances between objects.

Work Environment
May experience slightly disagreeable features such as temperature changes or noise from time to time. Work performed in an environmentally controlled environment.

Performance Dimensions

Collegiality
Exhibit confidentiality, honesty, and actions that build trust and strengthen relationships. Listen to others and effectively communicate in a clear and concise manner through written and verbal communication.
Demonstrate respect and commitment to the values of diversity and equity; seek out and incorporate diverse perspectives into decision making.

Excellence and Creativity
Exhibit initiative and ingenuity by taking ownership of tasks to proactively improve services, avoid problems, or develop opportunities. Generate novel and valuable ideas to impact institutional missions.
Identify and implement new methods to increase efficiency and quality.

Education and Development
Displays an ongoing commitment to continuous learning and self-improvement in one's area of responsibility.
Actively seek out mentorship and learning opportunities that can be applied to current and future work

activities. Develop and maintain professional affiliations. Participate in design, development, and/or evaluation of instructional materials, methods, courses, or programs.

Agility and Judgment
Remain flexible and versatile in rapidly changing environment and adapt quickly to changing circumstances. Change behavioral style or method of approach when necessary to achieve a goal. Make timely and sound decisions based on analysis of information, experience, and logic. Show reliability and accountability in the successful completion of all work.

Stewardship and Institutional Citizenship
Support transformational change to achieve institutional vision and strategies. Be an active and thoughtful participant in institutional initiatives, meetings, and committee work. Conserve resources and use in an efficient and cost effective manner across all institutional missions. Look for ways to improve and promote quality within area of influence.

Disclaimers

Background Check
Employment in this position may be contingent upon successfully completing a background and criminal history check, caregiver background check in accordance with the Wisconsin Caregiver Background Check Law, physical examination, and / or driving record check.

Equal Opportunity Employer
The Medical College of Wisconsin is an affirmative action / equal opportunity employer and does not discriminate in hiring or employment on the basis of age, sex, race, color, religion, national origin, veteran status, disability, or sexual orientation.

Diversity and Inclusion
The Medical College of Wisconsin defines diversity as a commitment to recognizing and appreciating the variety of individual differences in an environment that promotes and celebrates individual and collective achievement. The diversity of MCW continues to be an important source of innovative ideas and creative accomplishments.

Confidentiality
Employees that have access to MCW, affiliate, subsidiary, or student data or Protected Health Information (PI), or research protected information are obligated to protect the confidentiality and proper use and access of this information in order to prevent loss, misuse, unauthorized access, unnecessary identification, or security breaches.

Completeness
This job description is not an employment contract and the Medical College of Wisconsin may modify this document at any time. This document is intended to indicate the types of tasks and levels of skill, effort, and responsibility required by positions assigned this title. This information shall not be construed as a declaration of the specific duties and responsibilities of any particular position. It is not intended to limit or modify the right of any supervisor to assign, direct, and control the work of direct reports. The functions described are not to be

interpreted as exclusive or all-inclusive of the various functions performed.