

UW HEALTH JOB DESCRIPTION

Machine Learning Engineer Principal

Job Code: 330098	FLSA Status: Exempt	Mgt. Approval: J. Long	Date: July 2021
Department: Enterprise Analytics		HR Approval: N. Lazaro	Date: July 2021

JOB SUMMARY

The Machine Learning Engineer Principal sits at the intersection of software engineering and data science. The Machine Learning Engineer Principal leverages software engineering and big data tools to turn healthcare big data into data science solutions that provide actionable insights to improve clinical care. The Machine Learning Engineer Principal is responsible for taking data science solutions and scaling them out to production-level models that can handle real-time data with rigorous operating standards in support of healthcare delivery.

The Machine Learning Engineer Principal works closely with data scientists, front-line clinicians, stakeholders, informaticists, and researchers, to build or enhance robust systems with embedded artificial intelligence and data science. The Machine Learning Engineer Principal has a bias towards actionable insights with the goal of “getting data science into the system”.

The Machine Learning Engineer Principal is conscious of advancing the data science maturity of UW Health and defining and showing how data science supports the organization’s overall mission and vision.

The Machine Learning Engineer Principal is a technical leader within UW Health IS and across the UW Health system. The Machine Learning Engineer Principal is accountable for key domains within the overall data science architecture at UW Health and leads initiatives that execute the technical architecture and roadmap for data science.

MAJOR RESPONSIBILITIES

Machine Learning Development and Deployment

Design and build software that uses machine learning solutions to improve clinical care, with a focus of deploying actionable, embedded solutions at the point of care or the point of decision making, “get data science into the system”.

Write production-level code consistent with software engineering principles, methodologies, and best practices; includes version controls, code reviews, software design, evaluation, and code debugging and troubleshooting.

Process and Standards

Develop and improve technical standards while reducing unnecessary technical complexity

People:

Work with architects and technical leaders to plan and execute initiatives that advance the machine learning architecture per the roadmap; responsible for the success of specific domain(s) within the overall architecture and roadmap as defined by architects or other leaders

Work closely with and provide leadership to IT and analytics shared services teams to advance MLOps, machine learning capabilities, and data architecture.

Is the department role model for machine learning engineering. Mentor and develop other machine learning engineers.

Technical Leadership:

Plan and lead cross-functional teams to execute key, large-scale deliverables according to technical roadmap, priorities, and architecture

ALL DUTIES AND REQUIREMENTS MUST BE PERFORMED CONSISTENT WITH THE UW HEALTH PERFORMANCE STANDARDS.

JOB REQUIREMENTS

Education	Minimum	Bachelor’s Degree in Computer Science, Mathematics, Software Engineering, Computer Engineering, or related fields (Four (4) years relevant work experience may be considered in lieu of educational requirement)
	Preferred	Master’s or Doctorate degree in Computer Science, Mathematics, Software Engineering, Computer Engineering, or related fields
	Minimum	None

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Work Experience	Preferred	<ul style="list-style-type: none"> • 1 year of experience in a technical leadership role • 5 years of experience in software engineering including software design, development, testing, release • 5 years of machine learning engineering or data science experience including delivery high-quality data science to stakeholders or deploying machine learning solutions into production • 3 years of experience in healthcare (provider or payer)
Licenses & Certifications	Minimum	None
	Preferred	<ul style="list-style-type: none"> • Epic certifications in Cogito • Epic badge or certification in Cognitive Computing Platform • Agile Scrum Certifications • ITIL Certifications • Azure Certifications • Other related certifications such as Google certification for Machine Learning Engineer
Required Skills, Knowledge, and Abilities		<p>Advanced proficiency in at least one of the following and at least intermediate proficiency in all three of the following:</p> <p><u>1. Machine learning engineering including ML development and operations. Competency includes:</u></p> <ul style="list-style-type: none"> • Skilled at MLOps including machine learning best practices, design patterns, model management, and machine learning frameworks (like Tensorflow, Keras, or PyTorch) and libraries (like scikit-learn, Theano) • Strong knowledge of machine learning concepts such as learning procedures, bias and variance tradeoff and math, probability, statistics, linear algebra. • Strong knowledge of public cloud technologies, services, and providers, including Microsoft Azure • Skilled at DevOps principles and practices, such as automation and orchestration with CI/CD or IaC, and at using IT frameworks like ITSM <p><u>2. Software engineering with an emphasis in machine learning applications. Competency includes:</u></p> <ul style="list-style-type: none"> • Skilled at writing robust code in Python, R, Java, Scala, C++, including debugging and version control technologies • Strong knowledge of computer science fundamentals (including data structures and algorithms), software and application development methodologies, and software architecture including API web services • Skilled at software testing methodologies such as unit testing, functional testing, integration testing <p><u>3. Data engineering with an emphasis in machine learning applications. Competency includes:</u></p> <ul style="list-style-type: none"> • Skilled at working with “big” data pipelines, including data ingestion, feature engineering, data validation; “big” data includes unstructured and streaming data • Strong knowledge of data structures and data modeling <p><u>Machine Learning Development and Deployment:</u> Outstanding analytical and problem-solving abilities Ability to write, test, deploy, robust code to build the solution which may include developing original and innovative approaches or adopting approaches that are new for the organization.</p> <p><u>Process and Standards</u> Ability to synthesize ambiguous and inconsistent feedback and input. Ability to drive deliverables and priorities. Defines technical specifications and requirements. Proactively identifies risks before work occurs. Ability to break down technical problems to root cause and first principles. Ability to reduce complexity and define elegant solutions and guiding principles.</p> <p><u>People:</u> Ability to proactively engage others at all levels of the organization Ability to lead a team Ability to work in agile, iterative frameworks and coach others on agile mindset.</p>

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Communication, Mentoring, and Teaching:

- Intermediate proficiency with written and verbal communication skills
- Intermediate proficiency with mentoring and formally teaching others on machine learning concepts, techniques, and mindset

Technical Leadership:

Advanced proficiency in leadership including technical leadership. Competency includes:

- Leads with integrity. Maintains strategic orientation. Demonstrates business and financial acumen. Champions innovation. Manages execution. Leads and develops people.
- Advanced proficiency in technical leadership: Sound technical judgment including decision-making amidst ambiguity, trade-offs, and constraints. Fluency at multiple levels in the technical stack. Balances long-term technical vision against short-term deliverables. Promotes elegant design and reduces unnecessary technical complexity. Works backwards and drives towards meaningful requirements. Staying current with a solid technical understanding of technology trends.

PHYSICAL REQUIREMENTS

Indicate the appropriate physical requirements of this job in the course of a shift. *Note: reasonable accommodations may be made available for individuals with disabilities to perform the essential functions of this position.*

Physical Demand Level		Occasional Up to 33% of the time	Frequent 34%-66% of the time	Constant 67%-100% of the time
X	Sedentary: Ability to lift up to 10 pounds maximum and occasionally lifting and/or carrying such articles as docket, ledgers and small tools. Although a sedentary job is defined as one, which involves sitting, a certain amount of walking and standing is often necessary in carrying out job duties. Jobs are sedentary if walking and standing are required only occasionally and other sedentary criteria are met.	Up to 10#	Negligible	Negligible
	Light: Ability to lift up to 10 pounds maximum and occasionally lifting and/or carrying such articles as docket, ledgers and small tools. Although a sedentary job is defined as one, which involves sitting, a certain amount of walking and standing is often necessary in carrying out job duties. Jobs are sedentary if walking and standing are required only occasionally and other sedentary criteria are met.	Up to 20#	Up to 10# or requires significant walking or standing, or requires pushing/pulling of arm/leg controls	Negligible or constant push/pull of items of negligible weight
	Medium: Ability to lift up to 50 pounds maximum with frequent lifting/and or carrying objects weighing up to 25 pounds.	20-50#	10-25#	Negligible-10#
	Heavy: Ability to lift up to 100 pounds maximum with frequent lifting and/or carrying objects weighing up to 50 pounds.	50-100#	25-50#	10-20#
	Very Heavy: Ability to lift over 100 pounds with frequent lifting and/or carrying objects weighing over 50 pounds.	Over 100#	Over 50#	Over 20#
List any other physical requirements or bona fide occupational qualifications:				