Iowa Department of Administrative Services – Human Resources Enterprise
Job Classification Description

Data Scientist 2

Definition

Leads data science projects and develops advanced machine learning models to provide strategic insights for solving complex, open-ended problems; utilizes large-scale, unstructured data to build models, applying advanced statistical methods and machine learning algorithms; drives innovation and data-driven strategies for the agency, and may act as a lead worker; performs related work as required.

The work examples and competencies listed below are for illustrative purposes only and not intended to be the primary basis for position classification decisions.

Work Examples

Assists supervisor by performing such duties as instructing employees, answering questions, distributing and balancing the workload, and checking work; may make suggestions on selection, promotions, and reassignments.

Designs, develops, and deploys complex machine learning and statistical models to solve highly intricate and ambiguous business problems.

Applies advanced techniques such as deep learning, natural language processing, computer vision, and reinforcement learning to extract valuable insights from large and diverse datasets.

Continuously evaluates and refines models by selecting appropriate algorithms, tuning hyperparameters, and implementing ensemble methods to enhance accuracy and performance.

Oversees end-to-end execution of large-scale data science projects, including scoping, planning, methodology selection, execution, and delivery.

Develops, manages, and continuously improves an agency's data program; establishes program goals, objectives, and requirements, and creates strategic and tactical approaches for data analytics integration into the agency's governance and operational systems.

Identifies and prioritizes opportunities for leveraging data to drive business growth, efficiency, and innovation.

Advocates for best practices in data collection, processing, storage, and analysis to ensure data integrity, quality, and security.

Establishes data governance frameworks and ensures compliance with relevant data privacy and security regulations.

Conducts thorough exploratory data analyses to discover trends, patterns, and anomalies, providing actionable insights to inform strategic decision-making.

Utilizes sophisticated statistical techniques and predictive analytics to forecast future trends and assess potential organizational impact.

Translates complex analytical findings into clear, concise, and compelling narratives for diverse stakeholder audiences.

Creates advanced visualizations and interactive dashboards to communicate complex findings using tools such as Tableau, Power BI, and custom visualization libraries.

Presents findings, recommendations, and strategic insights to senior leadership and stakeholders, facilitating data-driven decision-making across the organization.

Produces comprehensive reports and documentation detailing methodologies, processes, and outcomes of data science initiatives.

Stays current with emerging trends, technologies, and methodologies in data science and machine learning, integrating relevant advancements into ongoing projects and practices.

Evaluates and selects appropriate tools, frameworks, and technologies to enhance analytical capabilities and operational efficiency.

Contributes to the development of organizational data literacy by educating non-technical stakeholders on data science concepts and applications.

Engages with various departments to understand complex requirements, define project objectives, and ensure alignment with organizational strategies.

Establishes processes for ongoing maintenance, support, and improvement of deployed data science solutions.

Ensures all data science activities adhere to ethical standards, promoting fairness, transparency, and accountability in model development and deployment.

Conducts risk assessments related to data usage and model impacts, implementing mitigation strategies where necessary.

Maintains strict compliance with all relevant legal and regulatory requirements concerning data privacy and security.

Competencies Required

Knowledge:

- Customer Service – Principles and processes for providing customer services, including customer needs assessment, meeting quality standards for services, and evaluating customer satisfaction.

- English Language – The structure and content of the English language, including the meaning and spelling of words, rules of composition, and grammar.

- Administration and Management – Business and management principles involved in strategic planning, resource allocation, human resources modeling, leadership technique, production methods, and coordination of people and resources.

- Mathematics – Arithmetic, algebra, geometry, calculus, statistics, and their applications.

- Computers and Electronics – Circuit boards, processors, chips, electronic equipment, and computer hardware and software, including applications and programming.

- Education and Training – Principles and methods for curriculum and training design, teaching and instruction for individuals and groups, and the measurement of training effects.

- Clerical – Administrative and clerical procedures and systems such as word processing, managing files and records, stenography and transcription, designing forms, and other office procedures and terminology.

Abilities:

- Written Expression – Communicate information and ideas in writing so others will understand.

- Written Comprehension – Read and understand information and ideas presented in writing.

- Oral Comprehension – Listen to and understand information and ideas presented through spoken words and sentences.

- Oral Expression – Communicate information and ideas in speaking so others will understand.

- Deductive Reasoning – Apply general rules to specific problems to produce answers that make sense.

- Inductive Reasoning – Combine pieces of information to form general rules or conclusions.

- Information Ordering – Arrange things or actions in a certain order or pattern according to a specific rule or set of rules (e.g., patterns of numbers, letters, words, pictures, mathematical operations).

- Mathematical Reasoning – Choose the right mathematical methods or formulas to solve a problem.

- Problem Sensitivity – Tell when something is wrong or is likely to go wrong. It does not involve solving the problem, only recognizing there is a problem.

- Flexibility of Closure – Identify or detect a known pattern (a figure, object, word, or sound) that is hidden in other distracting material.

- Category Flexibility – Generate or use different sets of rules for combining or grouping things in different ways.

- Originality – Come up with unusual or clever ideas about a given topic or situation, or to develop creative ways to solve a problem.

Skills:

- Critical Thinking – Using logic and reasoning to identify the strengths and weaknesses of alternative solutions, conclusions or approaches to problems.

- Reading Comprehension – Understanding written sentences and paragraphs in work related documents.

- Active Listening – Giving full attention to what other people are saying, taking time to understand the points being made, asking questions as appropriate, and not interrupting at inappropriate times.

- Speaking – Talking to others to convey information effectively.

- Writing – Communicating effectively in writing as appropriate for the needs of the audience.

- Mathematics – Using mathematics to solve problems.

- Systems Analysis – Determining how a system should work and how changes in conditions, operations, and the environment will affect outcomes.

- Systems Evaluation – Identifying measures or indicators of system performance and the actions needed to improve or correct performance, relative to the goals of the system.

- Coordination – Adjusting actions in relation to others' actions.

- Time Management – Managing one's own time and the time of others.

- Active Learning – Understanding the implications of new information for both current and future problem-solving and decision-making.

- Judgment and Decision Making – Considering the relative costs and benefits of potential actions to choose the most appropriate one.

- Monitoring – Monitoring/Assessing performance of yourself, other individuals, or organizations to make improvements or take corrective action.

- Complex Problem Solving – Identifying complex problems and reviewing related information to develop and evaluate options and implement solutions.

Minimum Qualification Requirements

Applicants must meet at least one of the following minimum requirements to qualify for positions in this job classification:

1) Graduation from an accredited four-year college or university with a degree in business analytics, economics, data science, statistics, mathematics, management information systems, or industrial management, and experience equal to five years of full-time work in business/data/statistical analytics, economic research, or data science.

2) All of the following (a, b, and c):
   a. Five years of full-time work experience in business/data/statistical analytics, economic research, or data science; and
   b. A total of four years of education and/or full-time experience in business/data/statistical analytics, economic research, or data science, where thirty semester hours of accredited college or university coursework in any field equals one year of full-time experience.
   c. Possession of a professional certificate in data science, business analytics, or data analytics.

3) All of the following (a, b, and c):
   a. Three years of full-time work experience in business/data/statistical analytics, economic research, or data science; and
   b. A total of four years of education and/or full-time experience (as described in part a), where thirty semester hours of accredited college or university coursework in any field equals one year of full-time experience; and
   c. A total of two years of graduate-level education and/or full-time experience (as described in part a), where twenty-four semester hours of accredited graduate college or university coursework in business analytics, economics, data science, statistics, mathematics, management information systems, or industrial management equals one year of full-time experience.

4) Current, continuous experience in the state executive branch that includes eighteen months of full-time work as a Data Scientist 1.

Effective date: 09/24 KC