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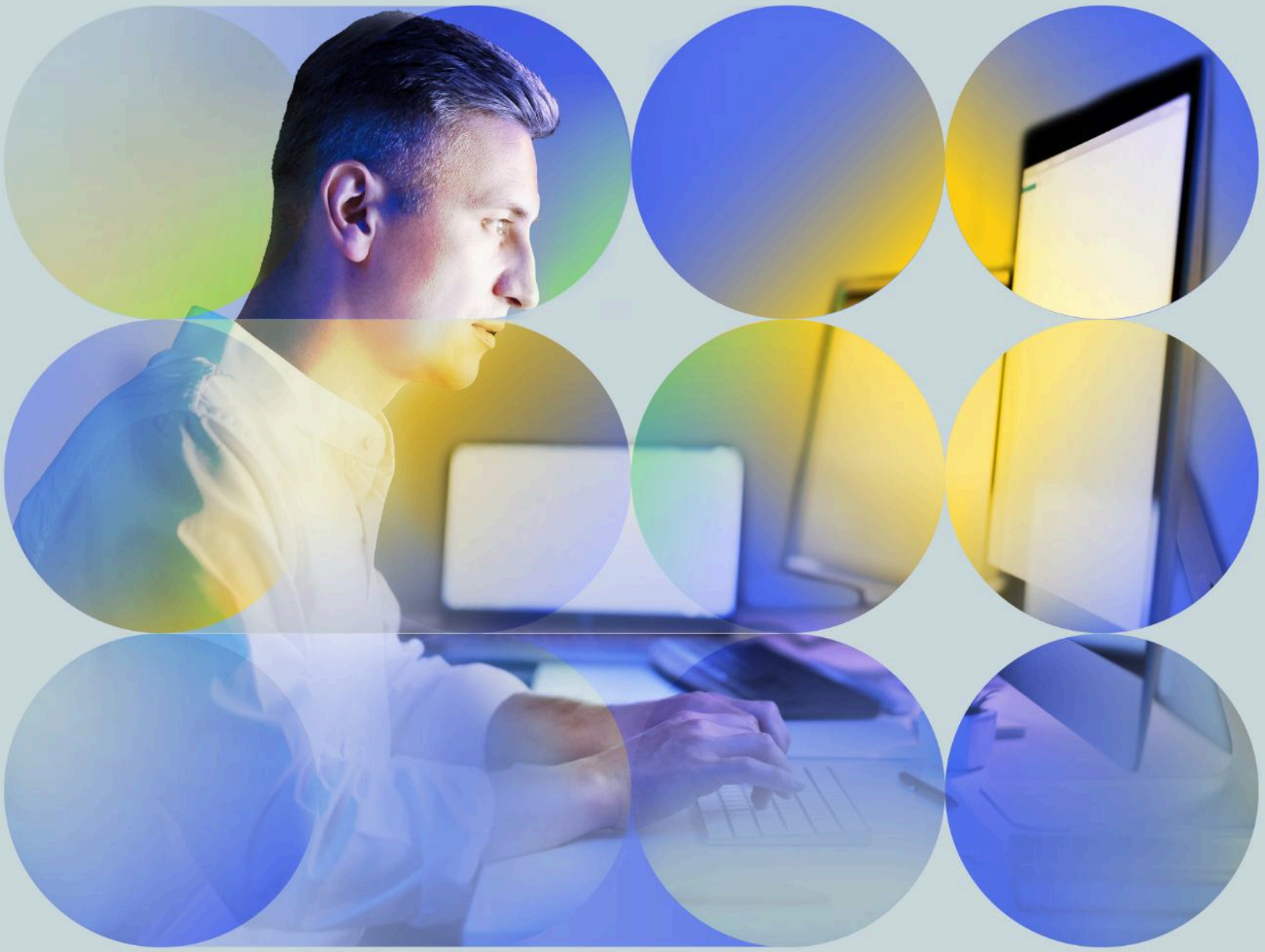
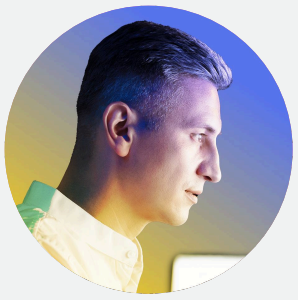


The AI-amplified future of work in public sector research and science

From public health to space exploration, AI can help government researchers work faster, uncover deeper insights, and tackle some of society's toughest challenges



DATA SCIENTIST | AI ON THE JOB

Today, data scientist roles exist across multiple government domains and programs

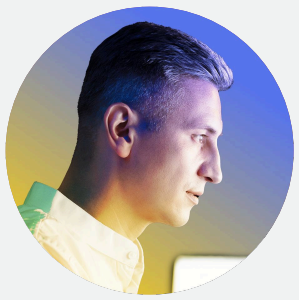
Here's a small sampling of them:

Health care	Social services	Education	Research and development	Intelligence
Commerce	Census	Veteran's affairs	Agriculture	Space
Defense	Treasury			

Tasks common to most data scientist roles:	How AI and gen AI can help:
• Collect and cleanse data • Create data visualizations • Documentation and reporting • Provide data-driven insights for process/program evaluation • Statistical modeling and analysis • Predictive modeling and scenario planning • Develop data governance policies and strategies	• Automate collection from multiple sources and detect anomalies or inconsistencies in data • Automatically generate charts and graphs based on data type and analysis context • Draft clear summaries and visual reports in natural language • Identify key trends, correlations, and contextual insights to support evaluations • Suggest optimal models, fine-tune parameters, and flag statistical issues • Improve forecasting accuracy by capturing complex patterns and dependencies • Review existing practices and recommend improvements

Outcomes: greater analytical capacity, enhanced problem-solving, and improved productivity

Source: Deloitte analysis.

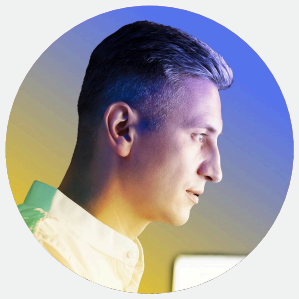


AI-AMPLIFIED DATA SCIENTIST | EVOLUTION WITH AI

In the future, here's how work could evolve with the arc of change AI technology is creating

Using AI and gen AI, data scientists can spend more time on strategic thinking, complex problem-solving, and interpreting the *why* behind data insights rather than just the *what*.

	AI/gen AI capability	Examples of tasks where AI and gen AI can support data scientists
Automate	Automate routine, repetitive administrative tasks to free up capacity	• Automate the tasks of data cleaning, normalization, and preprocessing • Automate code documentation for projects
Augment	Supplement available tools and resources to increase productivity	• Help evaluate predictive model performance and recommend improvements • Generate code or complete sections of code, leading to faster development cycles
Extend	Execute and expand activities humans are unable to perform at scale	• Enable work on problems previously deemed too complex • Detect anomalies in data sets, improving accuracy and quality control
Create	Generate new content, analyses, and ideas using gen AI	• Create interactive dashboards and visualizations that highlight key trends and patterns • Help with data augmentation using generative models, creating synthetic data to augment limited data sets



This evolution provides insight into what technical and human-centric skill sets a data scientist should consider building ...

AI and tech skills

- Frontline data governance
- Data analytics
- Workflow automation
- AI/ML technologies
- Hallucination detection
- Cloud technologies
- Python and programming languages (R, SQL)

Human-centric skills

- Problem-solving
- Logic and analysis
- Critical thinking
- Creativity and innovation
- Risk management
- Stakeholder management

... and what role they play interacting with AI

AI Consumers

They use AI tools in daily work to boost productivity, make data-driven decisions, and streamline tasks—all without needing deep technical expertise.

AI Builders

These technical experts design, develop, and maintain robust AI solutions that meet organizational needs.

AI Pathfinders

They focus on strategic implications and opportunities, fostering an AI-enabled culture by identifying new applications instead of relying on deep technical skills.

Expert: Certain members of each group have higher levels of expertise and proficiency.

AI Ambassadors

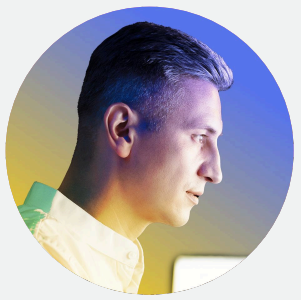
Proficient in using AI tools, they promote AI adoption within their teams, provide guidance and training, and bridge the gap between technical groups and end users.

AI Architects

They design and manage complex AI projects, considering enterprisewide impacts and the integration of various systems.

AI Visionaries

They set the enterprise and external strategic direction for AI initiatives, leading the organization toward innovative AI adoption.



AI-AMPLIFIED DATA SCIENTIST | REFRAMING THE ROLE

With AI changing the nature of work, what might the data scientist role look like if it were reframed?

From data wrangler to data storyteller

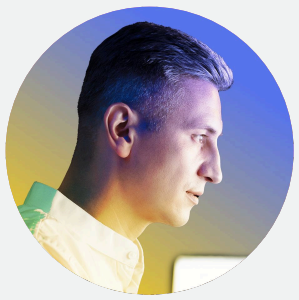
The mission of a data scientist has always been to make sense of data and distill meaningful insights. With AI and gen AI relieving data scientists of tasks such as data processing and wrangling, they could be empowered to focus on being proficient storytellers who craft engaging narratives and communicate insights that can drive action.

Gen AI can also augment how information is communicated, creating sharp visualizations, graphics, podcasts, and videos to inform, educate, and persuade stakeholders and decision-makers.

From coder to AI orchestrator

With the advent of advanced AI and machine learning tools, data scientists can move beyond coding, database management, and statistical analysis to higher-impact efforts like problem-solving and innovation.

Instead of writing code, data scientists could orchestrate the training and optimization of machine learning models. They could fine-tune hyperparameters, select the best algorithms, and ensure models perform optimally in real-world scenarios.



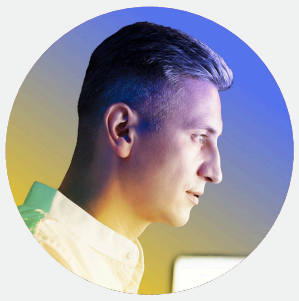
Putting all the pieces together, what might an AI-amplified data scientist look like in action?

"Meet my AI co–data scientist, Auralis"

Data scientist Mike teams up with Auralis, a multi-agent AI assistant, to develop a responsive detection system for identifying fraud, waste, and abuse in his department.

Mike identifies key data sources like financial transactions, procurement records, and audit logs, while Auralis quickly collects and cleans this data for analysis through multiple agents. They collaboratively explore the data, with Mike pinpointing suspicious patterns and Auralis using machine learning to detect anomalies. Together, they uncover inefficiencies, potential instances of fraud, and areas for improvement.

Mike selects predictive algorithms to forecast risks, and Auralis automates the process by testing algorithms and tuning parameters. The AI system evaluates performance using cross-validation. Mike ensures the results align with department goals and ethical standards, while Auralis continuously refines the models. The system generates regular reports, dashboards, and alerts to keep stakeholders informed.



Here's where some of this is starting to make an impact today

Data scientists enabling AI and analytics across the US Army

Computer and data scientists at the Army Corps of Engineers' (USACE) Engineer Research and Development Center are working to enable new gen AI capabilities across the Army. These capabilities allow users to manage the output from the large language model to be presented in the format that's most useful or comprehensible to them. For example, they can tailor the output to a less technical audience, avoiding the use of highly specific jargon.

Source: Daisy Thornton, "USACE data scientists enabling AI, analytics across Army," *Federal News Network*, Aug. 14, 2024.

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