



WHAT IS DATA SCIENCE?

A GUIDE FOR FUTURE DATA SCIENTISTS





How to Use this Resource

Data science serves as one of the most impactful industries of the 21st century, and in light of ongoing technological progress, data science has become one of the most sought-after careers in recent years.

As you consider obtaining a **master's degree in data science**, we encourage you to read this resource in full or click below to skip to the topic that interests you most — get started now.

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A STEM Degree for the Future: What is Data Science?

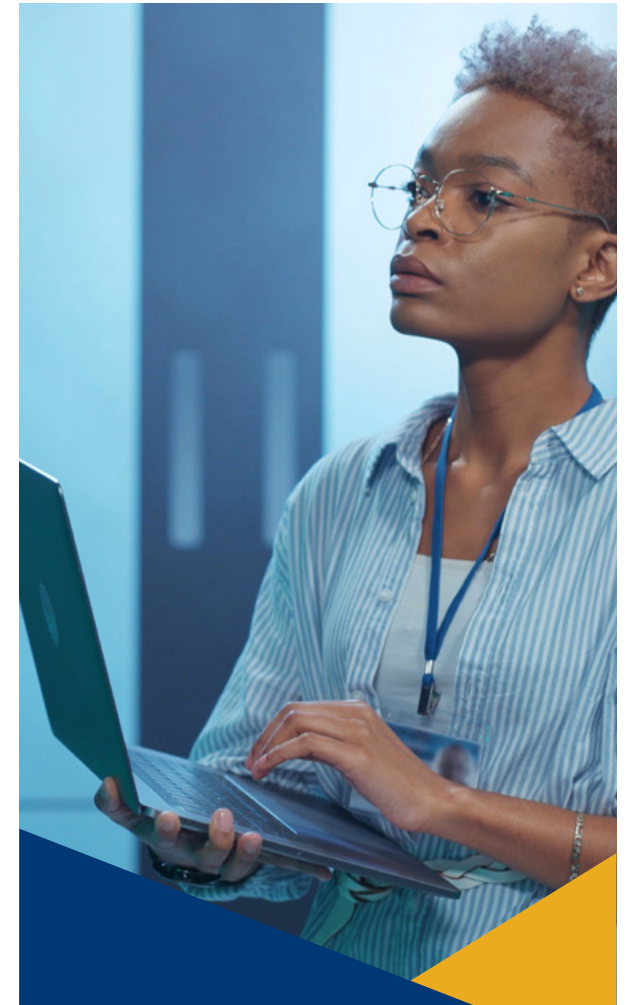
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Today, we have access to more data than we ever have before, and as technology continues to advance, so does the amount of data that is created and consumed.

Facts related to data growth:

- In 2020, users sent around **500,000 Tweets per day**.
- In 2020, people created **1.7 MB** of data every second.
- By the end of 2020, **44 zettabytes** made up the entire digital universe.
- In 2021, **68%** of Instagram users viewed photos from brands.
- By 2022, **70%** of the globe's GDP will have undergone digitization.
- By 2025, **200+ zettabytes** of data will be in cloud storage around the globe.
- Every day, **306.4 billion emails** are sent, and **500 million Tweets** are made.

Source: [Techjury](#).



Thanks to technological innovation, we now have ways of gathering, identifying and using data to inform future decisions and perpetuate positive change in countless industries. But in order to do so, organizations from nearly every field need strategic professionals who understand how to harness the power of data — data scientists.

What is data science?

Data science “is a blend of various tools, algorithms, and machine learning principles with the goal to discover hidden patterns from the raw data.”

Data science combines methods and tools from disciplines including analysis, statistics, databases, big data, artificial intelligence, numerical analysis, graph theory and visualization with the aim of gathering data, finding information in that data and applying that information to solving real-world problems.

As a discipline, data science uses scientific methods, processes, algorithms and systems to extract knowledge and insights from many structured and unstructured data. Further, data science also incorporates empirical, theoretical and computational techniques to solidify data-driven decisions.

At Kent State University, we offer a new [Master of Science in Data Science](#) — a rigorous, competitive degree program for future leaders in the field of data science. You have the valuable opportunity to obtain a data science degree that will transform your career; keep scrolling to learn more.

Exploring Data Science Jobs: What Does a Data Scientist Do?

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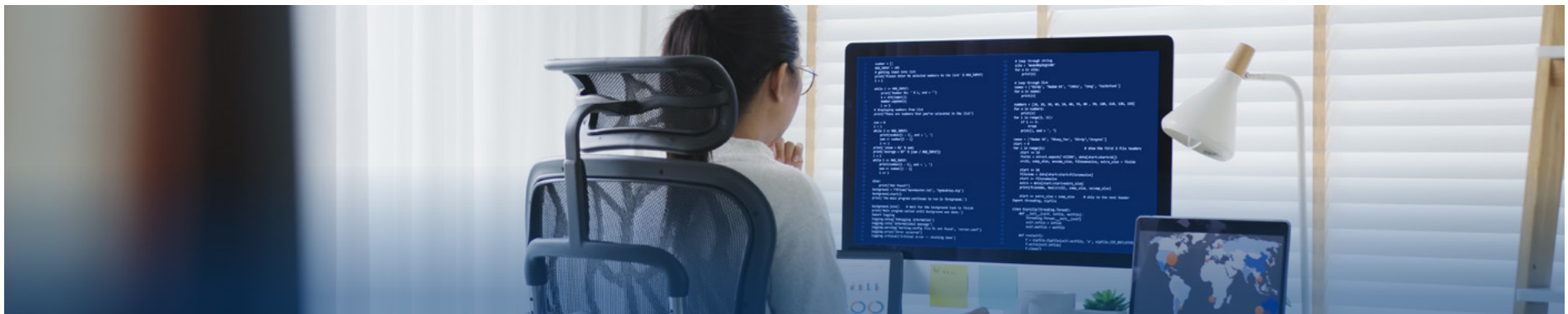
Using the latest technologies, [data scientists identify, crack and solve complex problems](#) that directly influence an organization's growth and development.

Data scientists work with elements related to mathematics, statistics and computer science — building quantitative algorithms to organize and assess large amounts of information used to answer questions and ultimately, drive strategy.

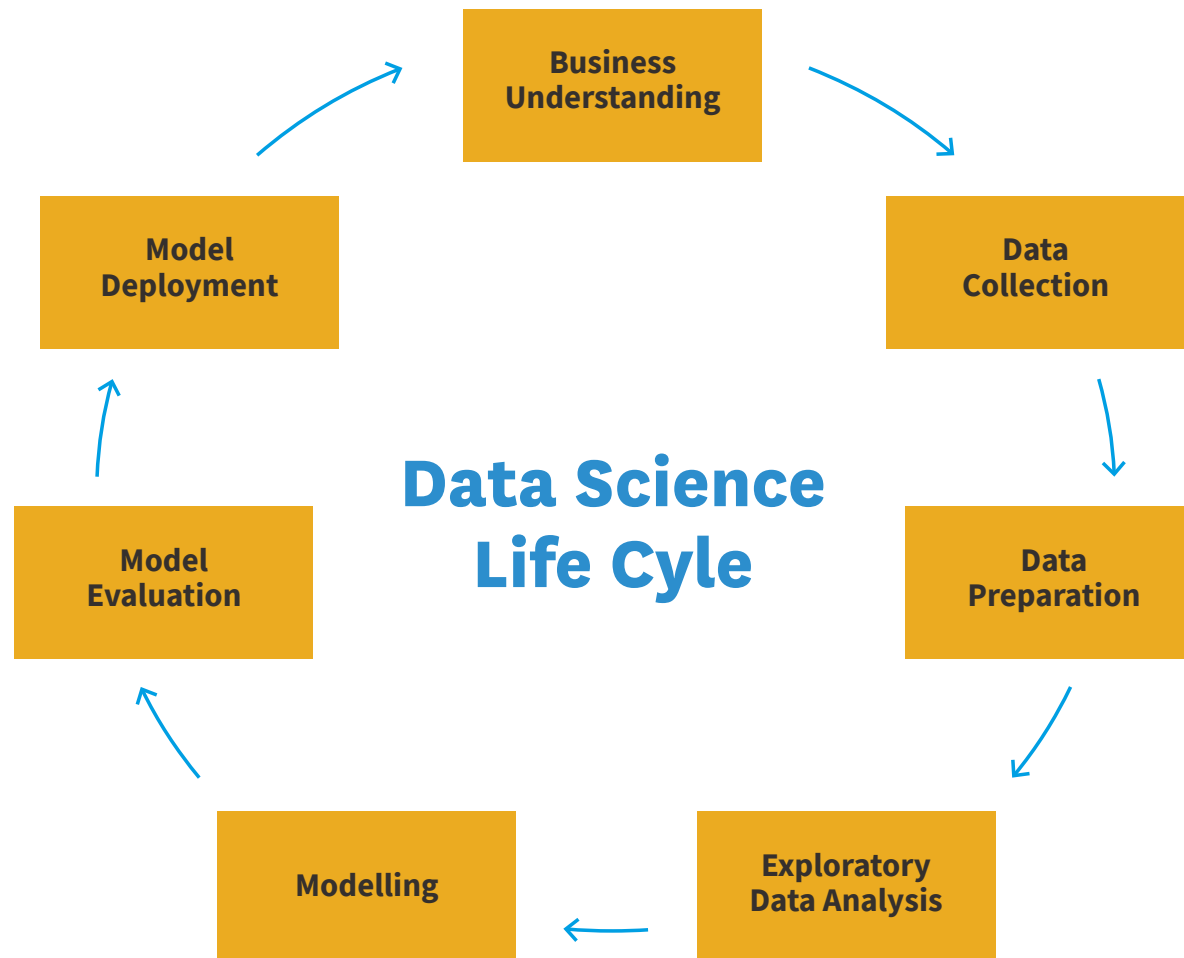
In addition to needing a deep knowledge of analysis and statistics, data scientists also need interpersonal and communication skills that allow them to explain and present highly-technical results to non-technical team members.

[Data scientists ask and answer complex questions](#), such as:

- Where is the data?
- What kind of data is needed?
- How to best organize the data?
- How to interpret the data?
- Are there patterns in the data?
- Where to put the data?



In order to effectively answer these questions, data scientists must follow a “pre-defined path or flow,” otherwise known as a **data science life cycle**. Each step of the life cycle plays a critical role in the data science process.

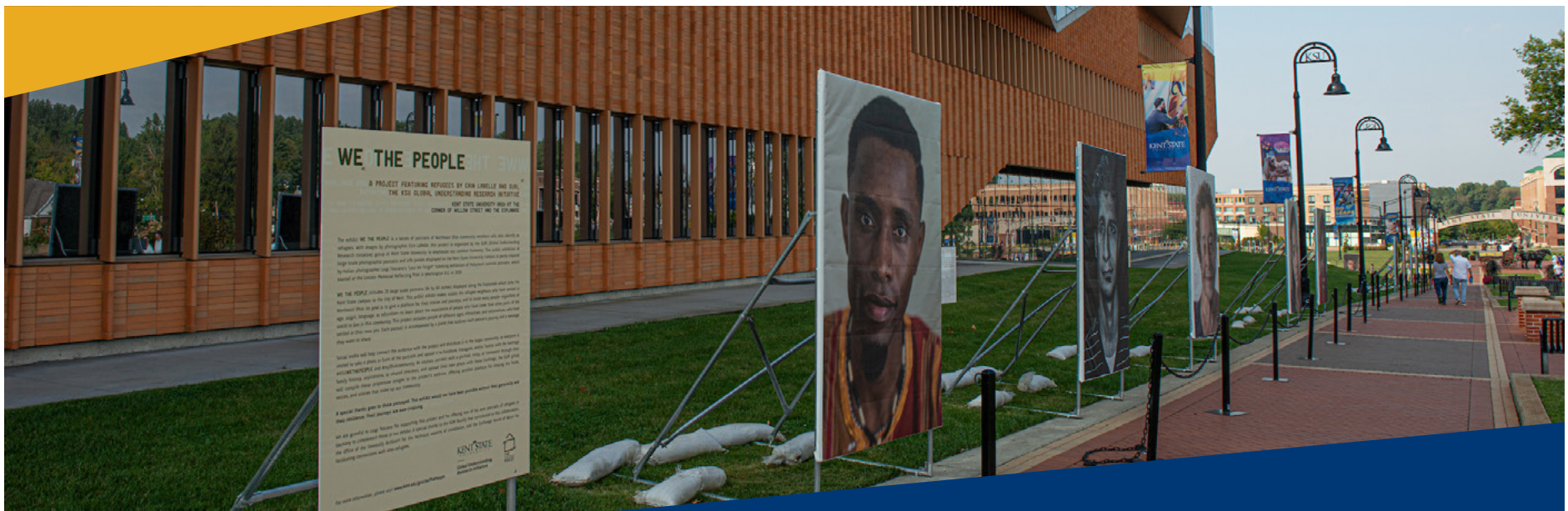


Impacting Countless Industries: What are the Benefits of Data Science?

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While data science is often thought of in terms of business or technology companies, data is everywhere — and the information derived from data impacts countless industries, such as:

- Health care
- Sustainability
- Business
- Marketing
- Infrastructure
- Public health
- Agriculture
- Exploration
- Aviation
- Robotics





While nearly every industry benefits from organization and analysis of data, here are a few examples of how data science benefits three specific fields.

Sustainability

Data science can be leveraged in many ways including [“measuring impact, managing resources, climate change, and health and equality.”](#) For instance, satellite imagery can be used to “gather data related to poverty and hunger reduction.” By analyzing this important data, it is possible to “estimate crop yields based on weather conditions and crop growth” — which can be used to target and assist potentially vulnerable populations.

Health Care

The health care industry is constantly evolving, and as technology advances, the field is seeing improvements that results in better patient care. For instance, data science makes it possible to provide [“extensive insights into optimizing and increasing the success rate of predictions.”](#) Data science also plays a vital role in monitoring patient health, drug discovery, predictive analysis as well as tracking/preventing disease.

Marketing

In the field of marketing, data science can be used in countless ways. By gathering and analyzing data through the lens of marketing, data scientists can provide [“valuable insight into customer’s preferences and behaviours.”](#) Channel optimization, customer segmentation, recommendation engines, market budget optimization, lead targeting and predictive analytics are just a few of the critical tools made possible by data science.

An Inside Look at Kent State's Master's in Data Science

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Kent State University's [Master of Science in Data Science](#) is an interdisciplinary program hosted by the Department of [Computer Science](#) and the [Department of Mathematical Sciences](#). It situates computing-specific competencies in computer science and statistical related fields including database, data mining, machine learning and big data within the [broader interdisciplinary space](#).

Note: The MS in Data Science at Kent State offers a [thesis track](#) as well as a non-thesis track. The program also offers opportunities to the students to extend the interdisciplinary space to other disciplines beyond math and computer science.

The key competencies for the master's degree in data science include:

- Computational and statistical thinking, and applied mathematical foundations
- Algorithms and software foundations
- Computing fundamentals, including programming, data structures, algorithms and software engineering
- Data acquirement and governance
- Data management, storage and retrieval
- Data mining and machine learning
- Big data, including complexity, distributed systems, parallel computing and high-performance computing
- Analysis and presentation, including human-computer interaction and visualization
- Model building and assessment

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Jumpstart Your Data Science Career at Kent State Today!

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At Kent State University, we are committed to developing the next generation of industry leaders who have the skills needed to make the world a better place. Armed with a master's degree in data science from Kent State, you will enter the workforce with a competitive edge — ready to thrive in any of the countless industries that rely on data.

If you have any questions about transforming your future with a graduate degree from Kent State University, we encourage you to contact us!

Connect with Kent State University today.

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