

After the 1985 lecture at the Chinese Academy of Sciences in Beijing, in 1997 C. Data analysis focuses on extracting insights and drawing conclusions from structured data, while data science involves a more comprehensive approach that combines statistical analysis, computational methods, and machine learning to extract insights, build predictive models, and drive data-driven decision-making. In contrast, data science deals with quantitative and qualitative data (e.g., from images, text, sensors, transactions, customer information, etc.) and emphasizes prediction and action. As such, it incorporates skills from computer science, statistics, information science, mathematics, data visualization, information visualization, data sonification, data integration, graphic design, complex systems, communication and business. Vasant Dhar writes that statistics emphasizes quantitative data and description. In 2014, the American Statistical Association's Section on Statistical Learning and Data Mining changed its name to the Section on Statistical Learning and Data Science, reflecting the ascendant popularity of data science. There is still no consensus on the definition of data science, and it is considered by some to be a buzzword. Both fields require a solid foundation in statistics, programming, and data visualization, as well as the ability to communicate findings effectively to both technical and non-technical audiences. In 1998, Hayashi Chikio argued for data science as a new, interdisciplinary concept, with three aspects: data design, collection, and analysis. This can involve tasks such as data cleaning, data visualization, and exploratory data analysis to gain insights into the data and develop hypotheses about relationships between variables. Both fields play vital roles in leveraging the power of data to understand patterns, make informed decisions, and solve complex problems across various domains. However, data science is different from computer science and information science. This can involve tasks such as data cleaning, data visualization, and exploratory data analysis to gain insights into the data and develop hypotheses about relationships between variables. While data analysis focuses on extracting insights from existing data, data science goes beyond that by incorporating the development and implementation of predictive models to make informed decisions. They work at the intersection of mathematics, computer science, and domain expertise to solve complex problems and uncover hidden patterns in large datasets. In 2012, technologists Thomas H. Data science is an interdisciplinary academic field that uses statistics, scientific computing, scientific methods, processes, algorithms and systems to extract or extrapolate knowledge and insights from noisy, structured, and unstructured data. Data analysis focuses on extracting insights and drawing conclusions from structured data, while data science involves a more comprehensive approach that combines statistical analysis, computational methods, and machine learning to extract insights, build predictive models, and drive data-driven decision-making. Moreover, both fields benefit from critical thinking and domain knowledge, as understanding the context and nuances of the data is essential for accurate analysis and modeling. Data science also integrates domain knowledge from the underlying application domain (e.g., natural sciences, information technology, and medicine). In 1962, John Tukey described a field he called "data analysis", which resembles modern data science. The field encompasses preparing data for analysis, formulating data science problems, analyzing data, developing data-driven solutions, and presenting findings to inform high-level decisions in a broad range of application domains. F. Stanford professor David Donoho writes that data science is not distinguished from statistics by the size of datasets or use of computing and that many graduate programs misleadingly advertise their analytics and statistics training as the essence of a data-science program. For instance, a data scientist might develop a recommendation system for an e-commerce platform by analyzing user behavior patterns and using machine learning algorithms to predict user preferences.