A Roadmap to Data Science
& Machine Learning

Introduction to Data Science & Machine Learning

Data Science and Machine Learning are rapidly growing fields that are being used to solve complex problems and make decisions. Data Science involves collecting, analyzing, and interpreting data to gain insights into a problem or question. Machine Learning is a subset of Artificial Intelligence that uses algorithms to learn from data and make predictions.

Data Science and Machine Learning are used in a variety of fields, from healthcare to finance to marketing. Understanding the fundamentals of these disciplines is essential for those looking to make an impact on the world and their career.

Difference between Data Science & Machine Learning

Data Science is a multi-disciplinary field focused on extracting insights from large and complex datasets, while Machine Learning is a subset of Artificial Intelligence focused on building models that can learn from data.

Data Science is the process of understanding data, while Machine Learning is the process of extracting knowledge from data.

Skills Needed for Data Science

- Strong knowledge of programming languages Python, R, Julia, etc.

- Familiarity with working with large amounts of structured and unstructured data.

- Comfortable with processing and analyzing data for business needs.

- Understanding of math, statistics, and probability.

- Data visualization and data wrangling skills.

- Knowledge of Data Analytical Tools: Excel, Tableau, Power BI, etc.

- SQL, Big Data Handling.

Careers in Data Science

- Data Scientist: Uses data to understand and explain the phenomena around them, to help organizations make better decisions.

- Data Analyst: Gathers, cleans, and studies data sets to help solve business problems.

- Data Engineer: Build systems that collect, manage, and transform raw data into information for business analysts and data scientists.

- Data Architect: Reviews and analyzes an organization's data infrastructure to plan databases and implement solutions to store and manage data.

- Business Intelligence Analyst: Gathers, cleans, and analyzes sales and customer data, interprets it, and shares findings with business teams.

Machine Learning

Machine learning is a kind of artificial intelligence that use algorithms to extract data and forecast future trends. Models are coded into software, allowing engineers to undertake statistical analysis to understand trends in data.

Machine learning, as a set of techniques and concepts, is used in data science, but it also emerges in domains outside of data science. Machine learning is frequently used by data scientists in their work to help acquire more information faster or to assist with trend analysis.

Skills Needed for Machine Learning

- Expertise in computer science, including data structures, algorithms, and architecture.

- Strong understanding of statistics and probability.

- Knowledge of software engineering and systems design.

- Programming knowledge, such as Python, R, and more.

- Ability to conduct data modeling, pipelining, and analysis.

- Deep Learning, CNN, Tensorflow/Pytorch.

Careers in Machine Learning

- Machine Learning Engineer: Researches, builds, and designs the AI responsible for machine learning, and maintaining or improving AI systems

- AI Engineer: Build AI development and production infrastructure, and then implements it

- Cloud Engineer: Builds and maintains cloud infrastructure

- Computational Linguist: Develop and design computers that deal with how human language works

- Human-centered AI Systems Designer: Design, develop, and deploy systems that can learn and adapt with humans to improve systems and society

Relevance of Data Science & Machine Learning

Data Science and Machine Learning are valuable tools for uncovering hidden trends and patterns, as well as advancing our understanding of the world around us.

By leveraging the power of data-driven insights, organizations can use these technologies to make informed decisions, optimize operations, and predict future outcomes.

Data Cleaning & Preparation

Data cleaning and preparation is an essential part of data science and machine learning. This involves identifying and correcting any errors or inconsistencies in the data, as well as formatting it in a way that makes it easier to work with.

Data cleaning and preparation can be a tedious and time-consuming process, but it is essential for accurate results and efficient analysis.
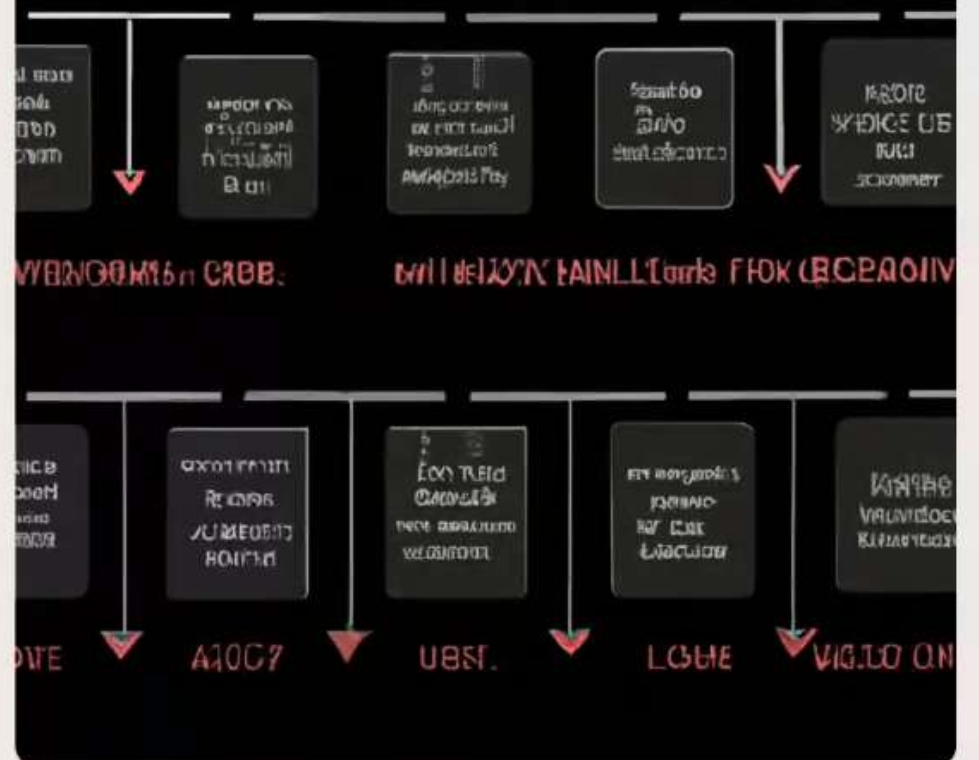
Analytics & Visualization

Analytics and visualization are essential for interpreting data and gaining insights. Understanding the principles of analytics and visualization is essential for data scientists and machine learning engineers.

Analytics and visualization techniques such as regression analysis, clustering, and data visualization can be used to gain valuable insights into data and make informed decisions.
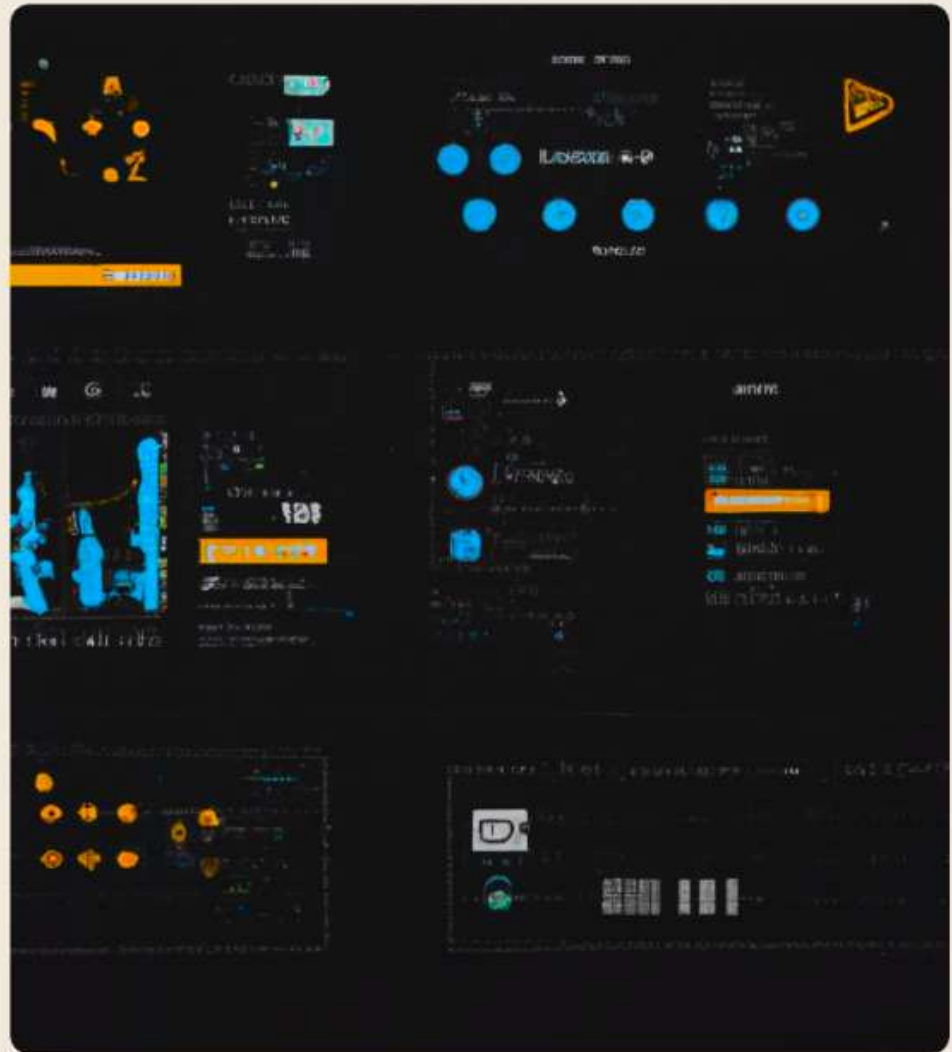
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No Problem. We will make it smooth. Let's dive in!