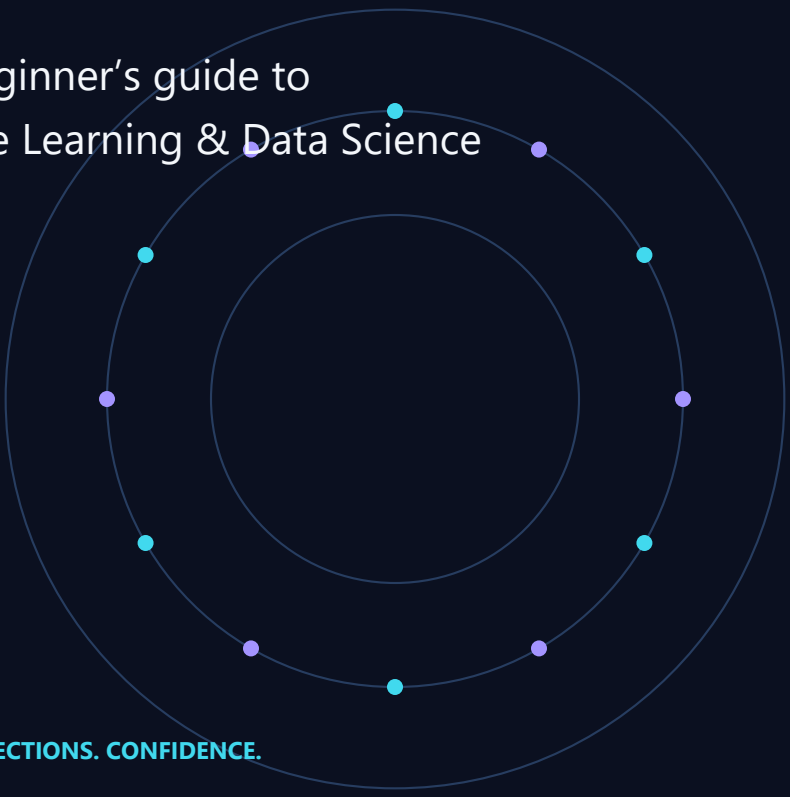
AI EVERYDAY / VISUAL GUIDES

DECODE THE DATA FRONTIER

A visual beginner's guide to
AI, Machine Learning & Data Science



CONCEPTS. CONNECTIONS. CONFIDENCE.

Illustrated explanations · Exercises · Quiz & answers

AI EVERYDAY

CONTENTS

Your route through the frontier

Start with the map, then follow an idea from raw information to a useful decision. You need no coding background. Each chapter builds one part of the picture.

The chapter names below are clickable. Use the “Contents” link in the footer to return here. Quiz answers are collected at the end so you can test yourself before checking.

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AI EVERYDAY

START HERE

Learn to ask better questions

A music app recommends a song. A dashboard explains last month's sales. A voice assistant switches on a lamp. All three work with information, but they do not perform the same job.

This guide gives you a practical vocabulary for separating the data, the model and the wider system. By the end, you should be able to explain what AI, Machine Learning and Data Science contribute to an application, and when a simpler approach may be enough.

Read the explanations, trace the diagrams and try the activities. Keep a notebook for your answers. A second pass through the examples will help more than memorizing definitions.

YOUR FIRST PREDICTION

Which parts of a music recommendation service involve Data Science, Machine Learning or AI? Write a first answer now. Revisit it after the component challenge.

DS

Evidence & insight

ML

Learned patterns

AI

Intelligent tasks

01 / MAP

Three fields. Three useful lenses.

Data Science combines statistical thinking, computing and knowledge of a subject to learn from data. The result might be an explanation, a visualization, an experiment or a prediction. A project can produce valuable evidence without training a model.

Machine Learning develops models that learn patterns from examples. A trained model can estimate a quantity, assign a category or reveal structure. A prediction is an output to evaluate, not a guarantee.

Artificial Intelligence is the broad field of building systems with capabilities such as perception, reasoning, planning or language generation. Some AI methods learn from data; others use explicitly represented knowledge or rules.

ASK ABOUT THE OUTPUT

Evidence and insight? Think Data Science. A learned pattern? Think Machine Learning. An intelligent capability in a wider system? Think AI. More than one answer can apply.

DS

Evidence & insight

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01 / MAP

The map is an overlap

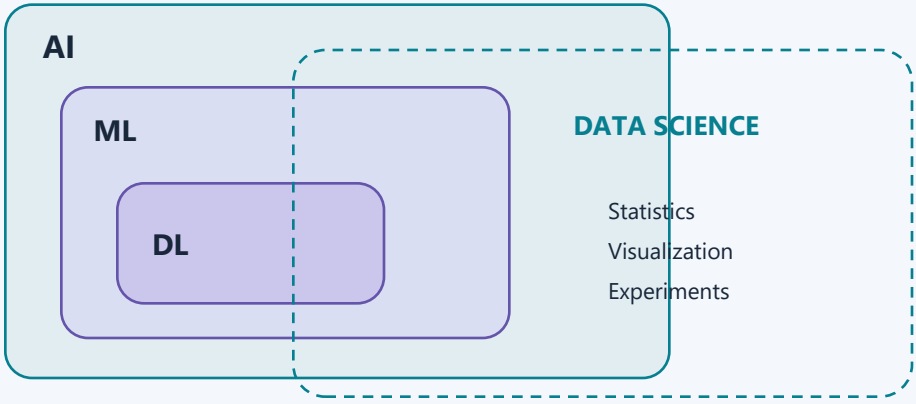
Machine Learning is a subfield of AI. Deep Learning is a family of Machine Learning methods built with neural networks containing multiple layers.

Data Science overlaps with these areas, but also includes work outside AI: descriptive statistics, visualization and experiments, for example. It is misleading to place every AI system inside Data Science.

The boundaries are useful guides, not separate job descriptions. One team may investigate data, train a model and build the software around it.

READ THE DIAGRAM

DL sits inside ML, which sits inside AI. The dashed Data Science region crosses those boundaries and extends beyond AI. This is a conceptual map, not a chart of field sizes.



01 / MAP

Follow a delivery robot

Imagine a small delivery robot operating in a controlled setting. Its team collects camera images and trip logs, checks missing records and studies where journeys fail. These are data preparation and analysis activities.

A learning model may identify obstacles. The team evaluates it on examples that were not used to train it. A planning system then combines perception with a route objective and explicit operating constraints.

Performance monitoring can reveal new problems. People decide whether to change the data, model, rules or operating conditions. This is one possible workflow, not a universal sequence that every project must follow.

A SYSTEM IS MORE THAN ITS MODEL

A good obstacle detector alone does not make a reliable robot. Planning, software controls, evaluation and human oversight also matter.

