

Algorithm

A **sequence** — a step-by-step plan to solve problems and accomplish tasks.

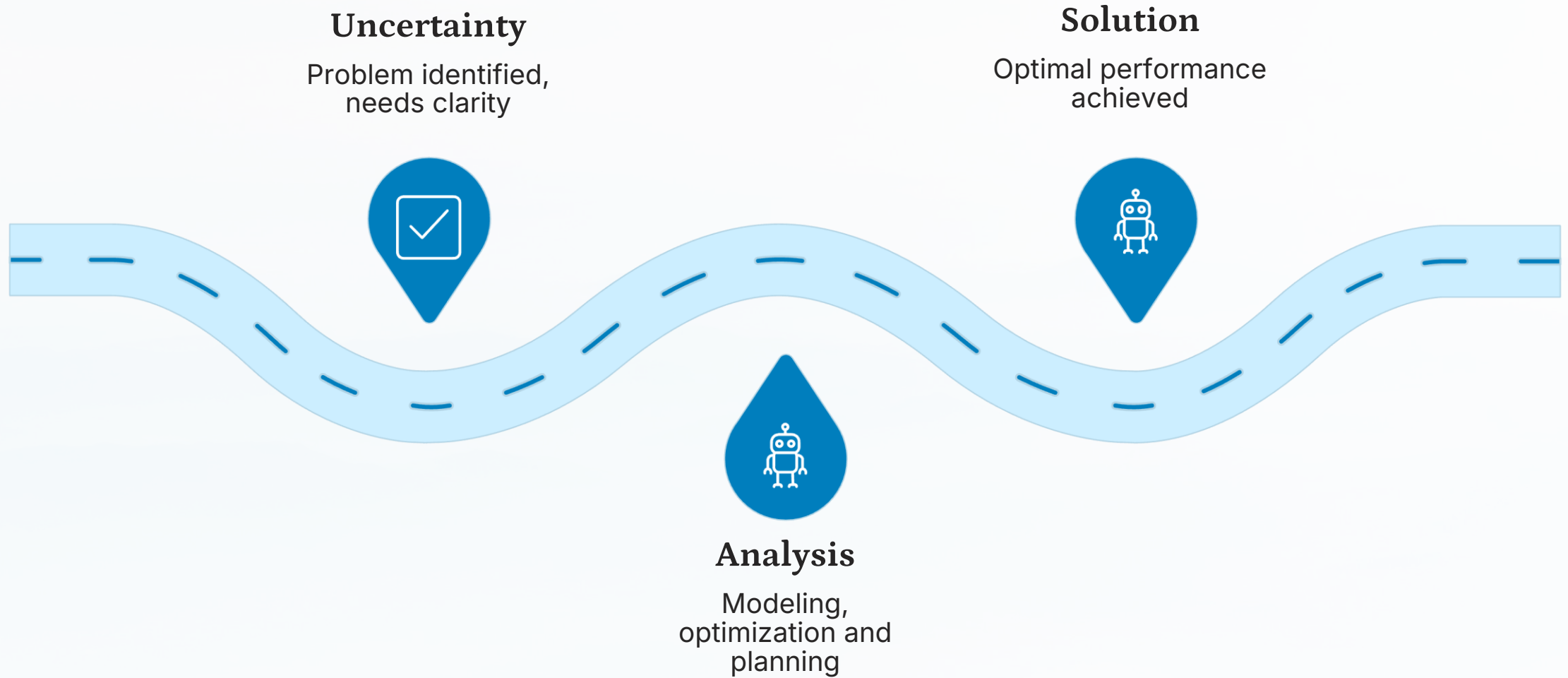


What Is Algorithm Design?

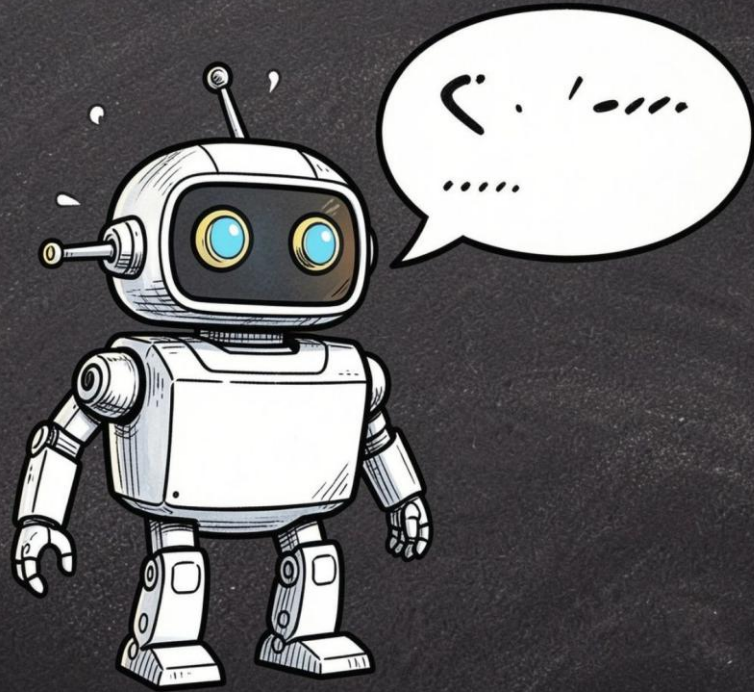
Algorithm design is the process of creating a structured plan to solve a problem. It combines two core ideas: an **algorithm** (the plan itself) and a **sequence** (the specific order of steps to follow).



The Algorithm Design Process



Algorithm design moves from identifying a problem, through analysis and optimization, to reaching an optimal solution.



CORE CONCEPT

Algorithm = A Plan

An algorithm is a **plan** that outlines everything needed to accomplish a task. It defines the steps and resources required to reach a goal.

The Plan

Everything we need to do

The Sequence

Step by step until finished

What Is a Function?



Reusable

Can be used repeatedly throughout a program



Easier Programs

Makes it easier to create and build programs



Less Repetition

Minimizes repetitive program writing



Easy Documentation

Keeps programs well-organized and documented



Structured Growth

Existing programs become more structured and easier to develop in the future

CORE CONCEPT

Sequence = Specific Order

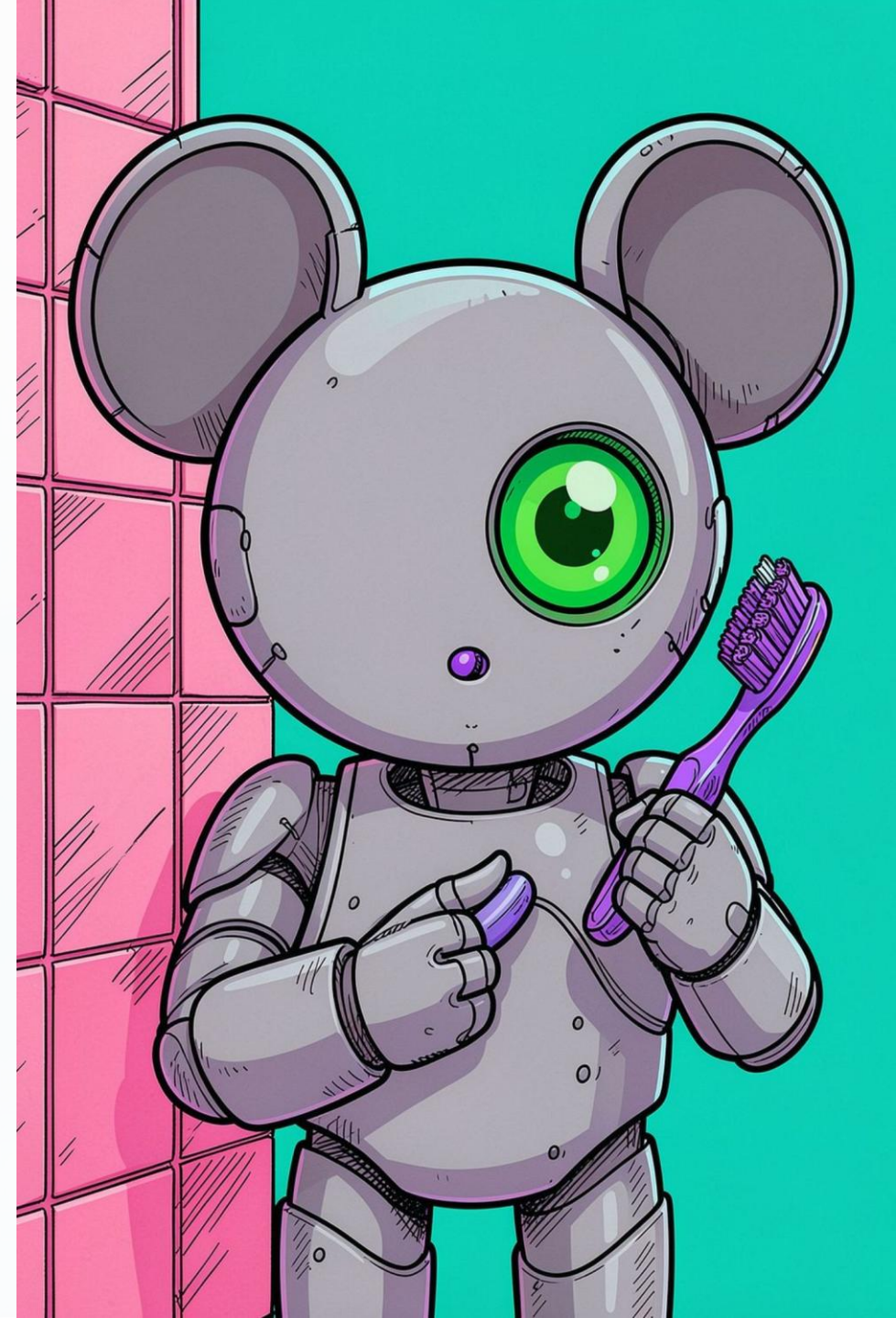
A sequence defines the **specific order of steps** to follow. You go step by step to execute the plan until all steps are finished.

- ❏ The order of steps matters — doing them in the wrong sequence can lead to incorrect results.



Example: Brushing Teeth

Let's apply algorithm design to a real-life task. The **algorithm** is "brush teeth." The **needed things** are toothpaste, toothbrush, and water. The **sequence** is the step-by-step order to complete the task.



The Brushing Sequence — Steps 1–3



Step 1: Open Toothpaste

Remove the cap from the toothpaste tube



Step 2: Apply Toothpaste

Squeeze toothpaste onto the toothbrush



Step 3: Open Mouth

Open your mouth to begin brushing

The Brushing Sequence — Steps 4–6



Step 4: Brush Teeth

Brush all teeth with the toothbrush



Step 5: Rinse Mouth

Rinse your mouth with water



Step 6: Smile!

The task is complete — great job!



Thank You!

Remember: an **algorithm** is a plan, and a **sequence** is the step-by-step order to follow that plan. Together, they help us solve problems — from brushing teeth to writing programs!