

# — Data Science

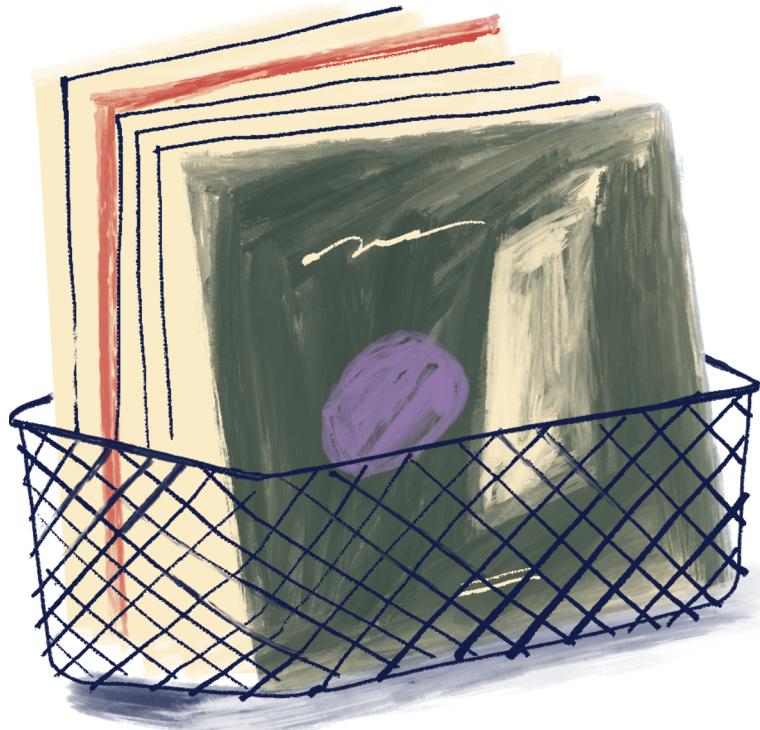


**Pankaj Chouhan**  
Machine Learning Engineer  
[@codeswithpankaj. com](http://@codeswithpankaj.com)

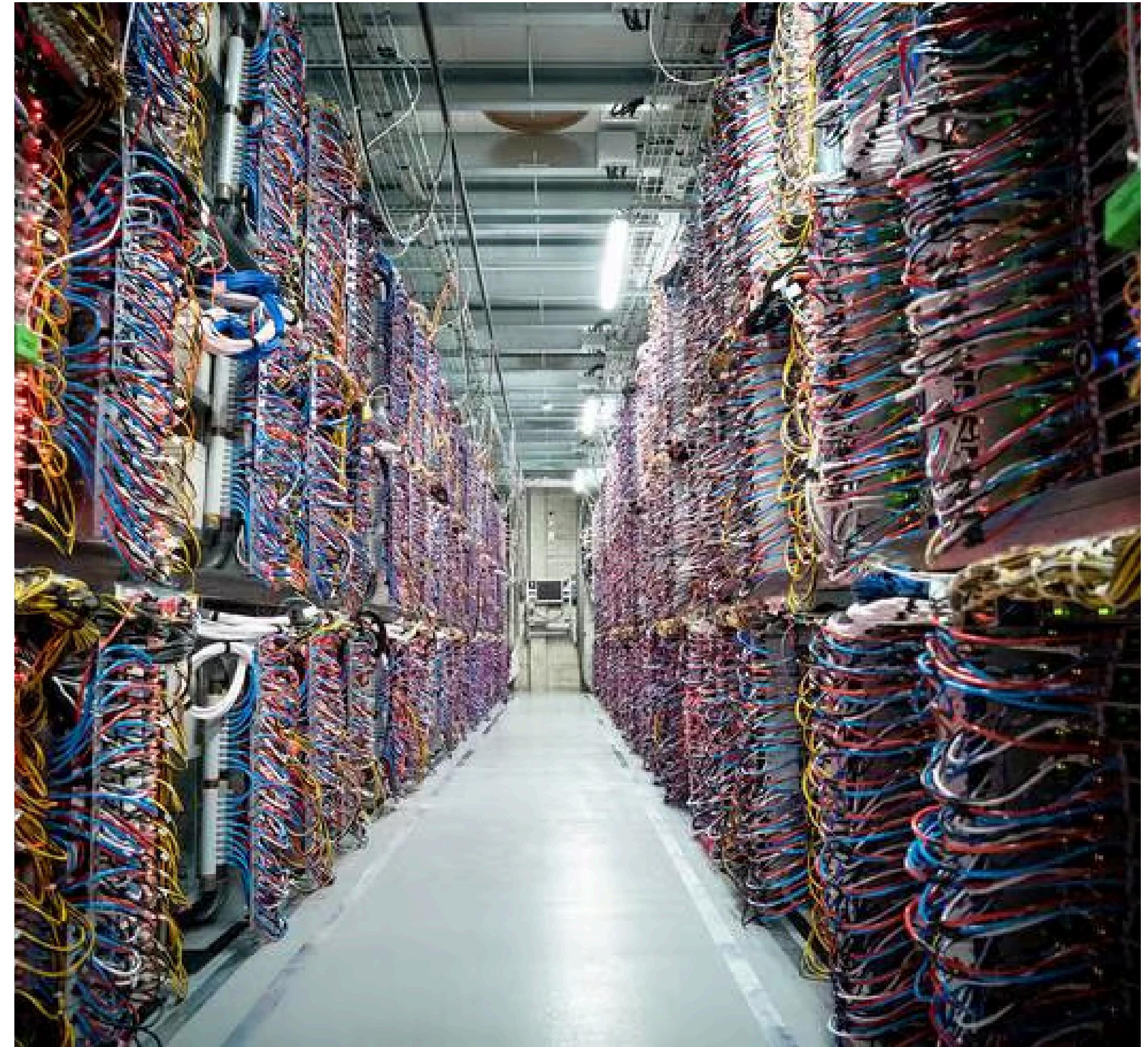
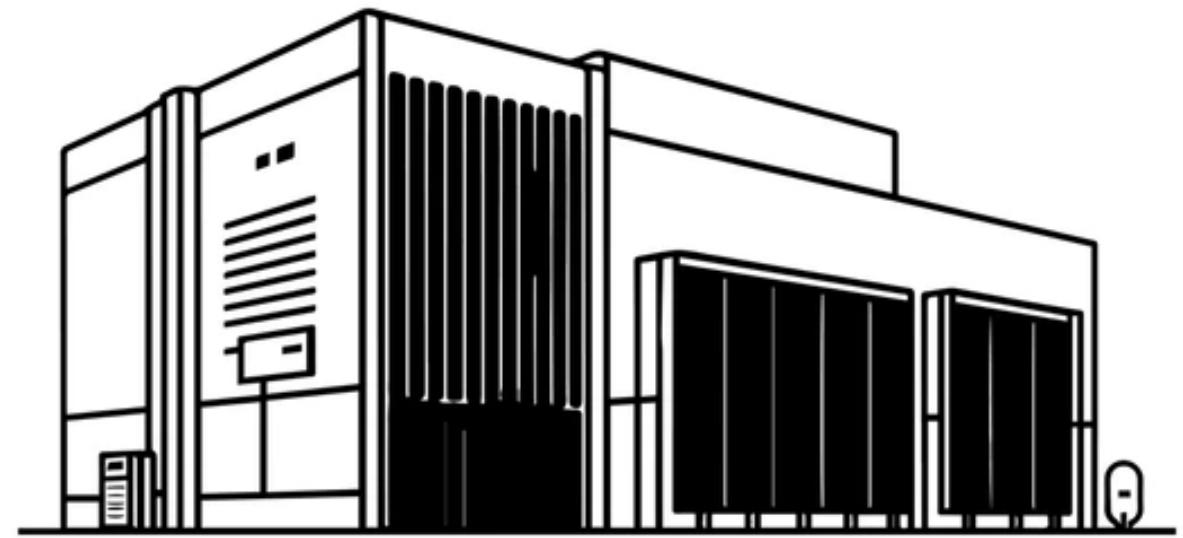
**What is Data ?**

# Data

**Facts or figures, or information that's stored in or used by a computer**



# Store Data



# Underwater DataCenters

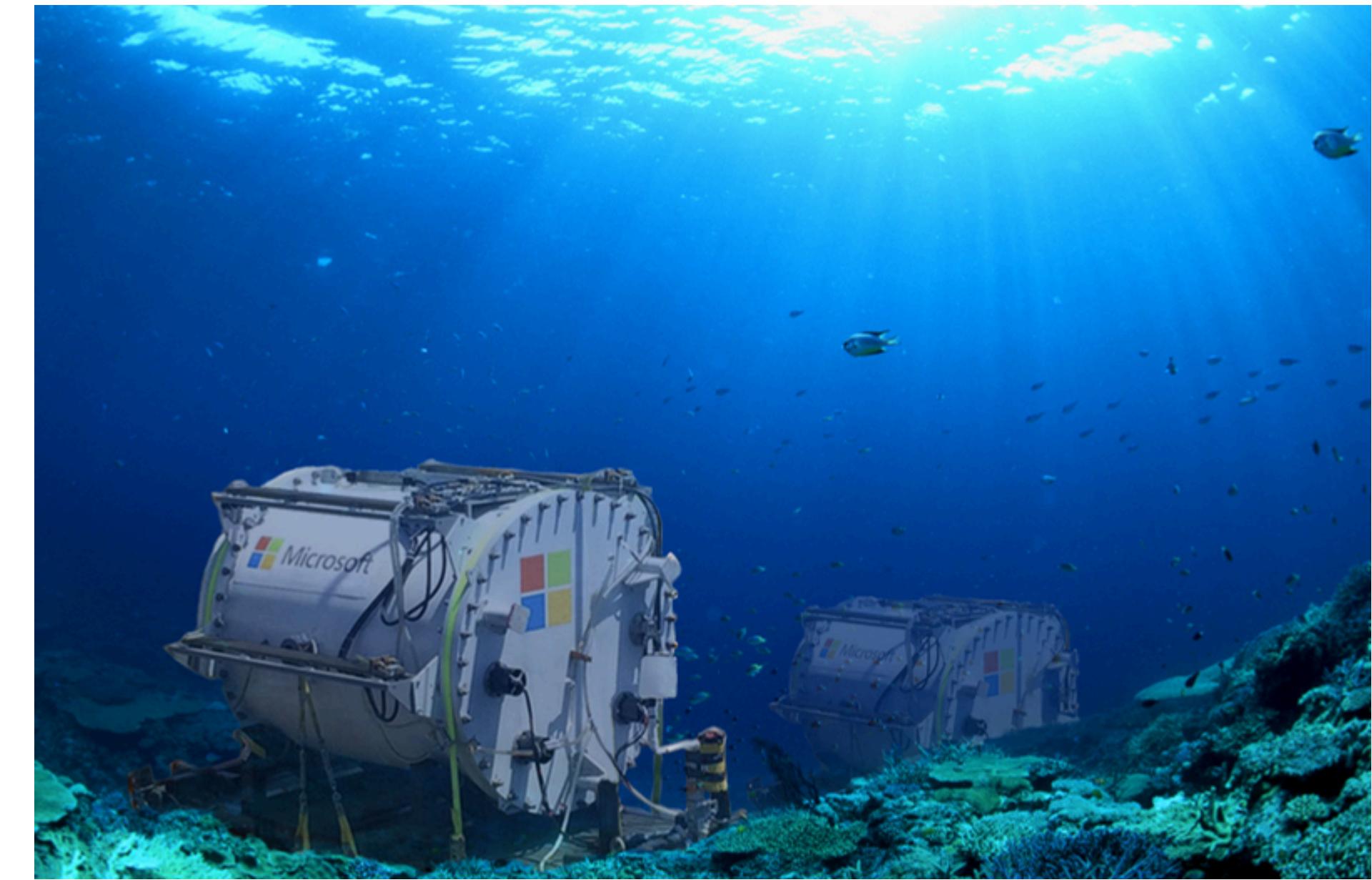


**Microsoft finds underwater datacenters are reliable, practical and use energy sustainably**

Microsoft retrieved the Northern Isles underwater datacenter from the seafloor off Scotland's Orkney Islands. Project Natick is proving the concept of underwater datacenters is feasible as well as logically, environmentally and economically...

 Source / Sep 14, 2020

# Underwater Data Centers and servers



# What is Data Science

Data Science is the study of data to find useful information that can help businesses make better decisions. It's a field that brings together ideas and skills from math, statistics, computer science, and artificial intelligence to understand and work with large amounts of data.





610

OBRERA

omgar

Eco 2000

COQUETRAS  
S.A.





**Garbage**

**Separating Garbage**



# Filter to customize



# Garage Sale



# Users

Imagine a company that sells products online.  
They collect data on customer purchases.



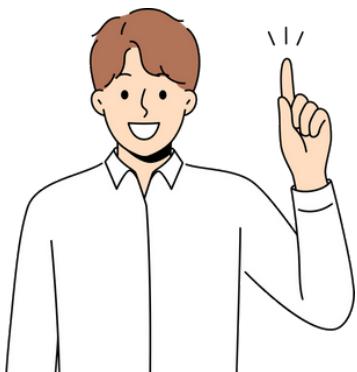
**WHAT ITEMS WERE BOUGHT**



**WHEN THEY WERE BOUGHT**



**HOW MUCH WAS SPENT**



Analyzing this data, data scientists can:





- **Identify Trends:** They might discover that certain products sell more during specific times of the year.



- **Customer Segmentation:** They can group customers based on buying behavior and target them with personalized marketing.

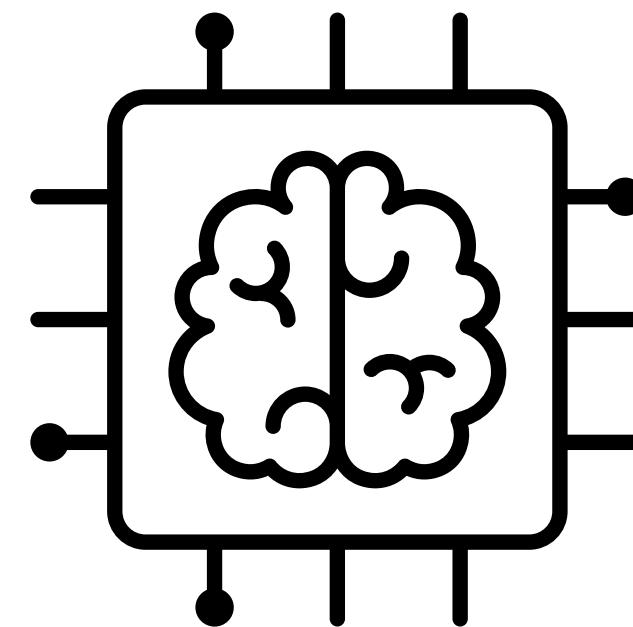


- **Predict Sales:** Using historical data, they can predict future sales and manage inventory accordingly.



- **Improve Customer Experience:** They can analyze customer feedback to identify areas for improvement.

# What Is Machine Learning ?





Machine learning is the science (and art) of  
programming computers so they can  
**learn from data.**

quantities

numbers

facts

observations

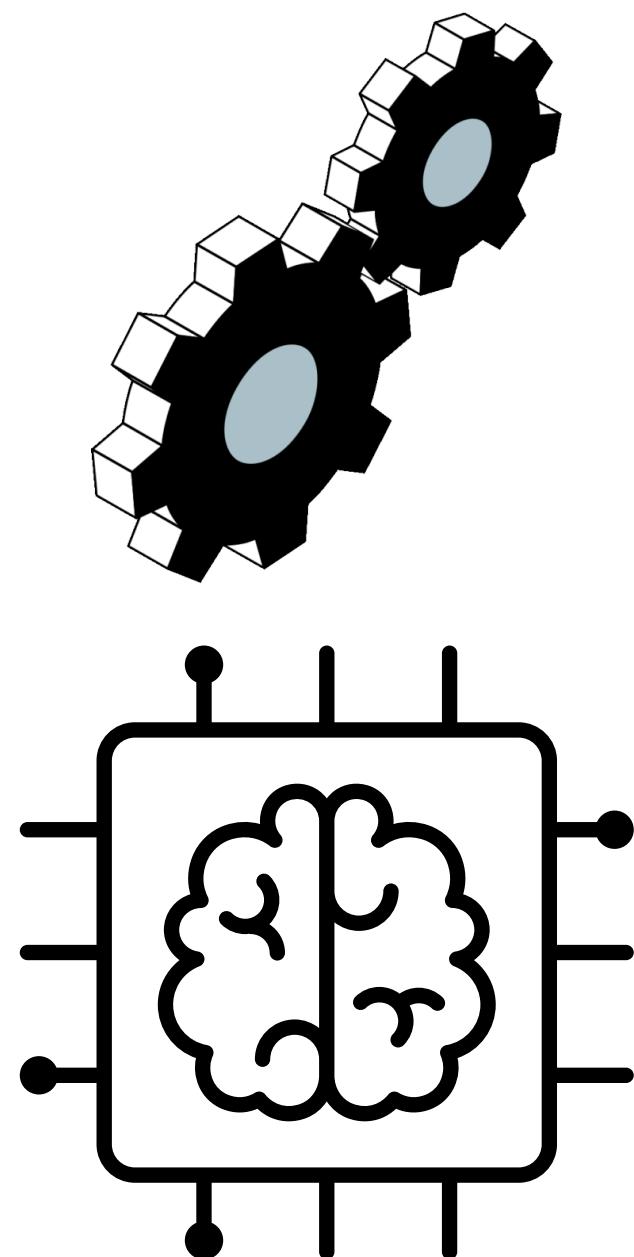
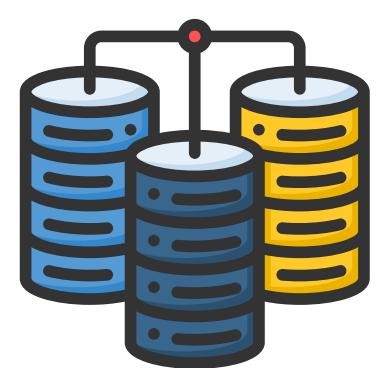
# What Is Data?

information

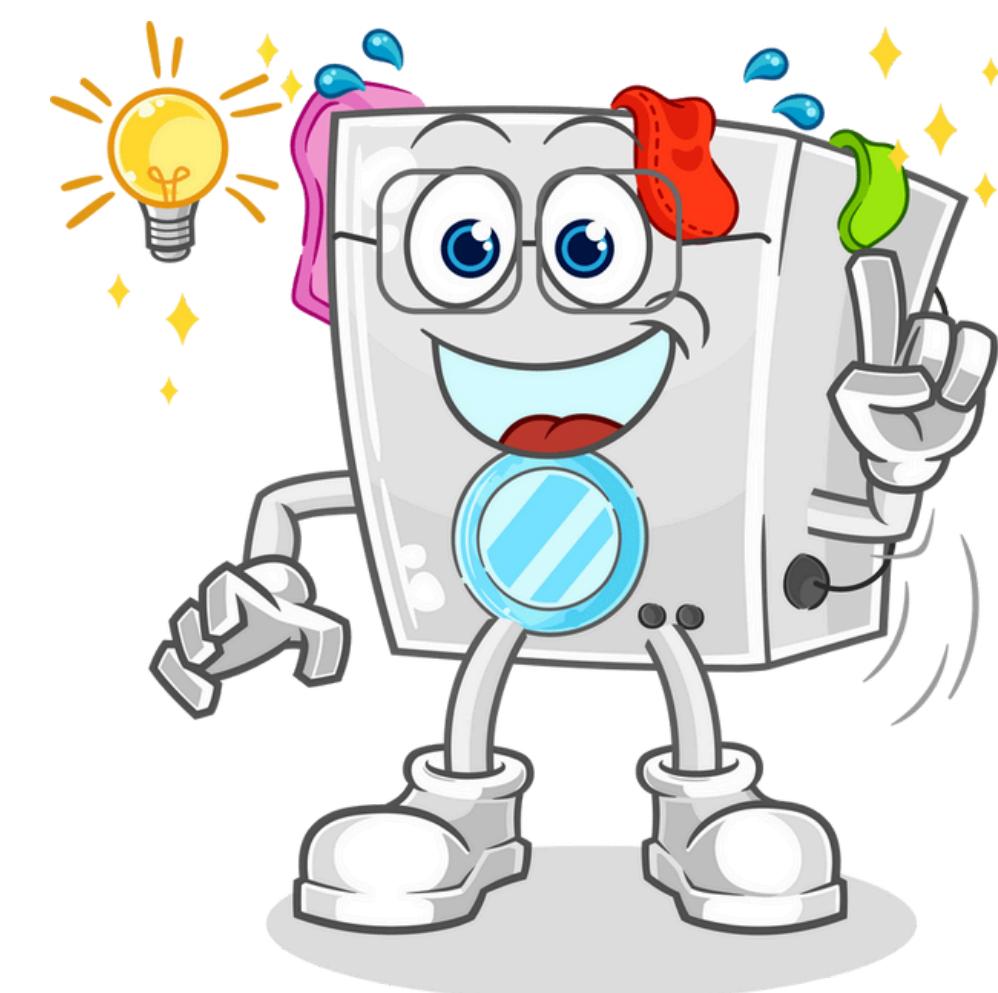
graphs

measurement

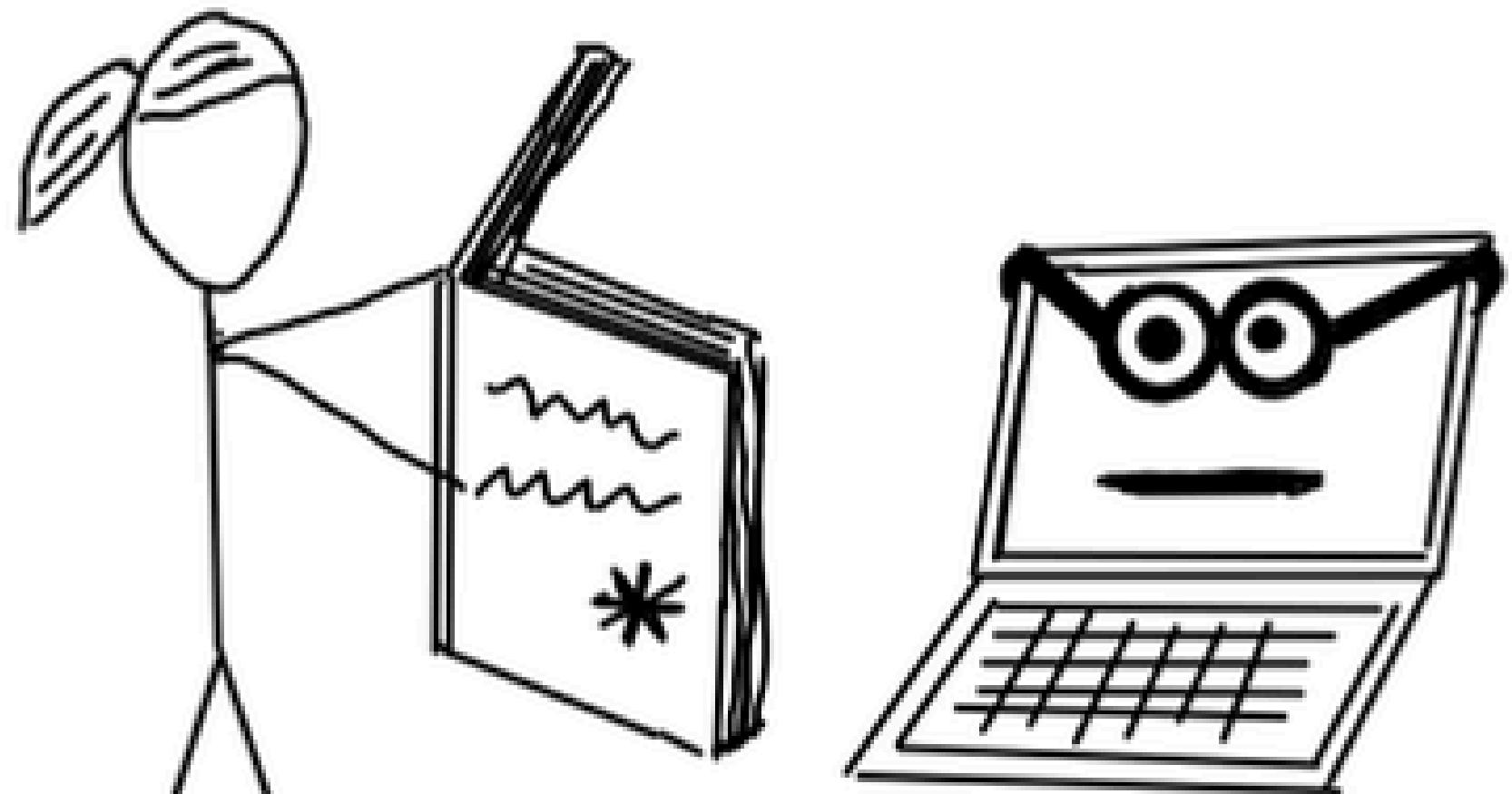
# Data

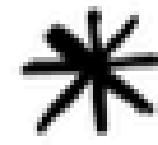


# Machine

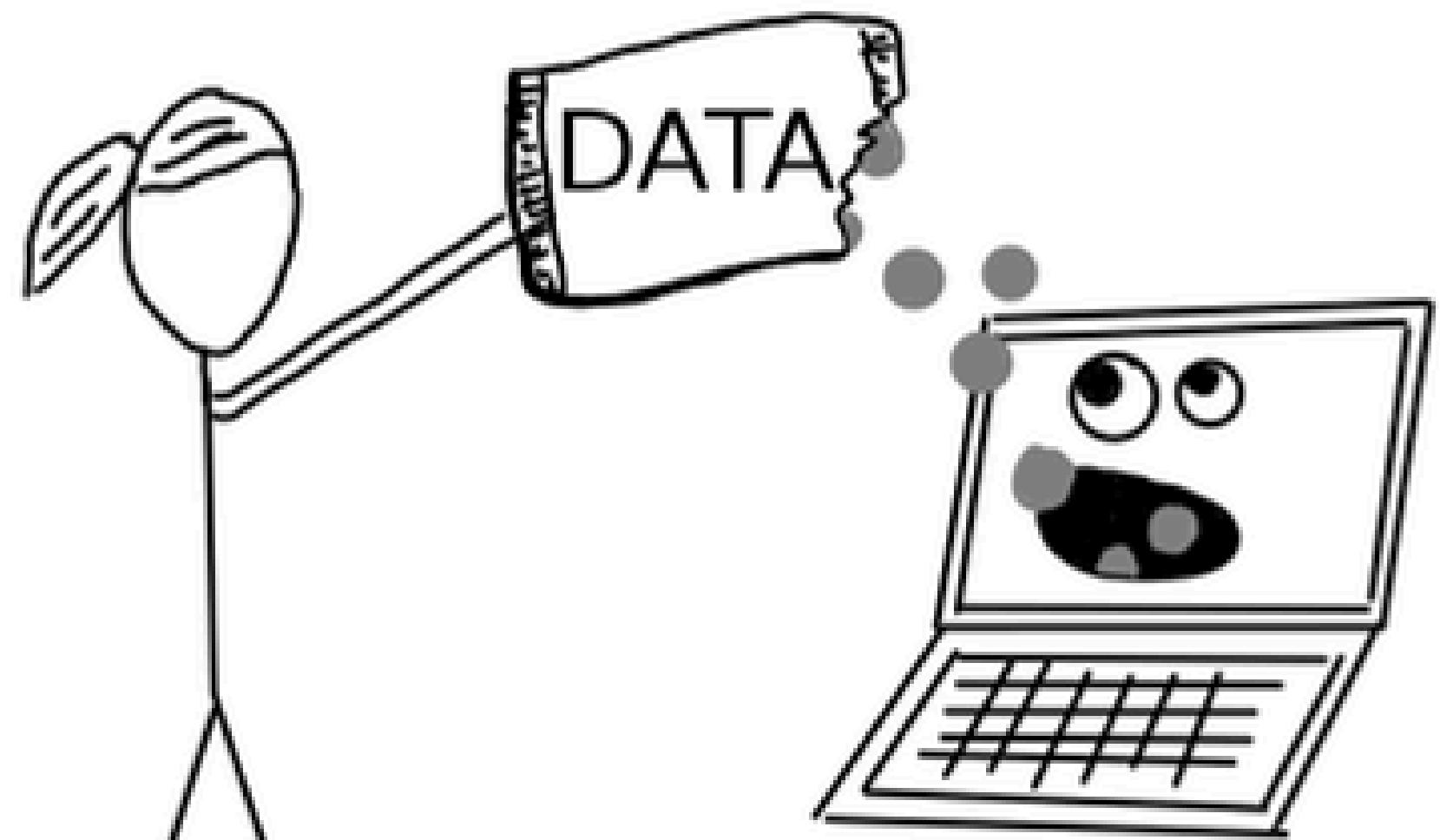


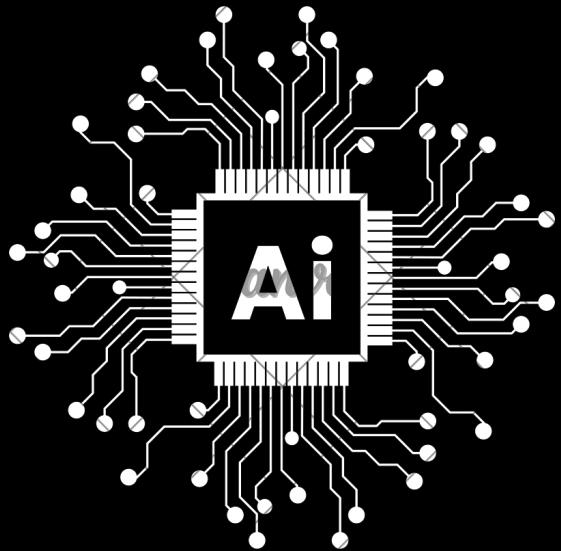
## Without Machine Learning



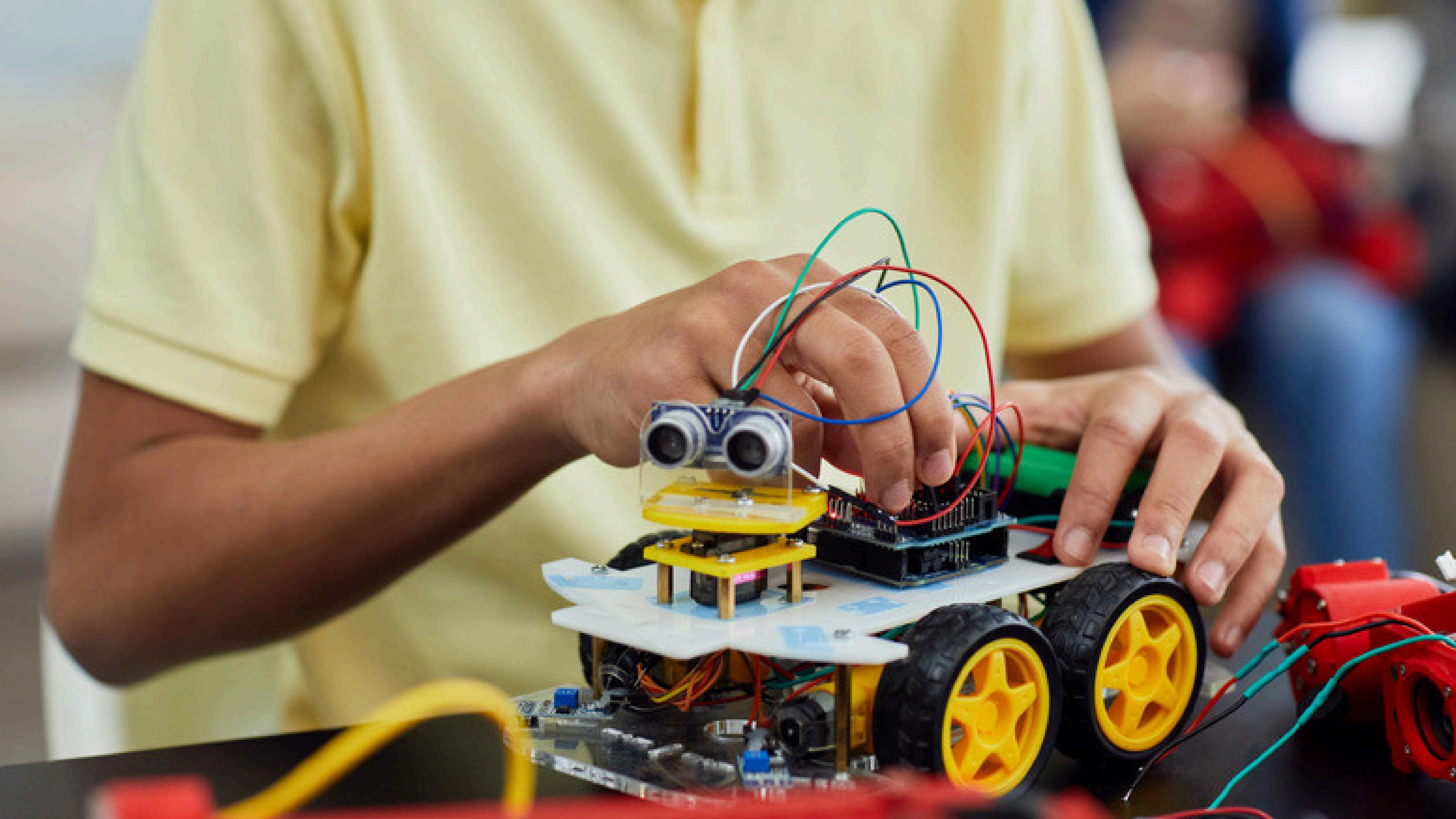
 **VERY SPECIFIC  
INSTRUCTIONS**

## With Machine Learning





Machine learning is the field of study  
that gives computers the ability to learn  
without being explicitly programmed.



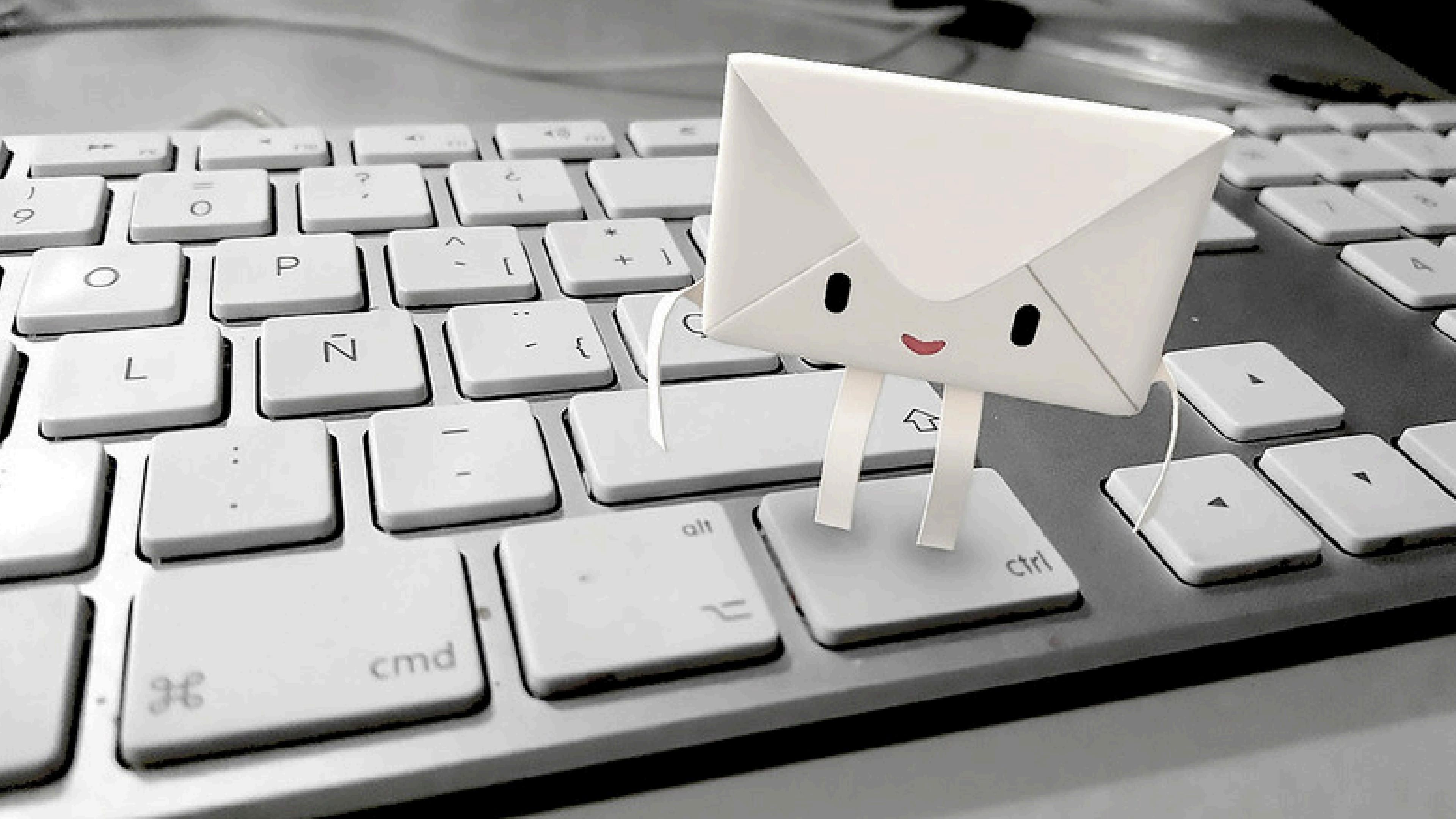
# Why Use Machine Learning ?



Your spam filter is a machine learning program that, given examples of spam emails (flagged by users) and examples of regular emails (nonspam, also called “ham”), can learn to flag spam.



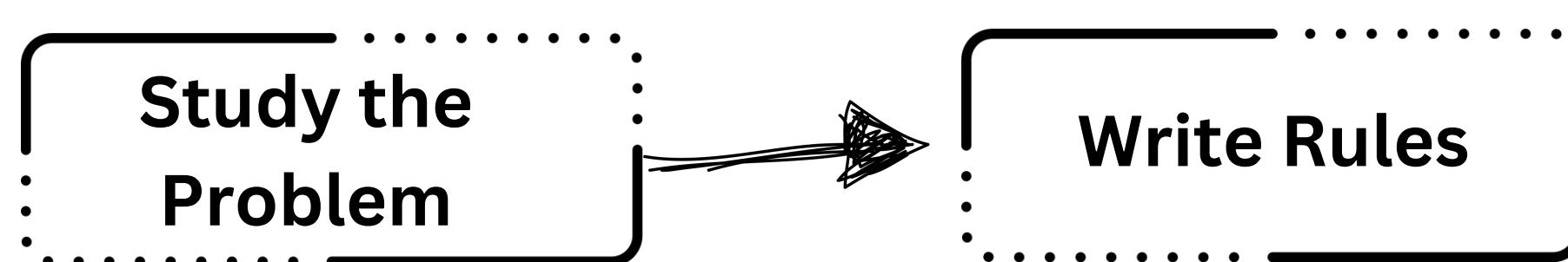
Consider how you would write a  
spam filter using traditional  
programming techniques

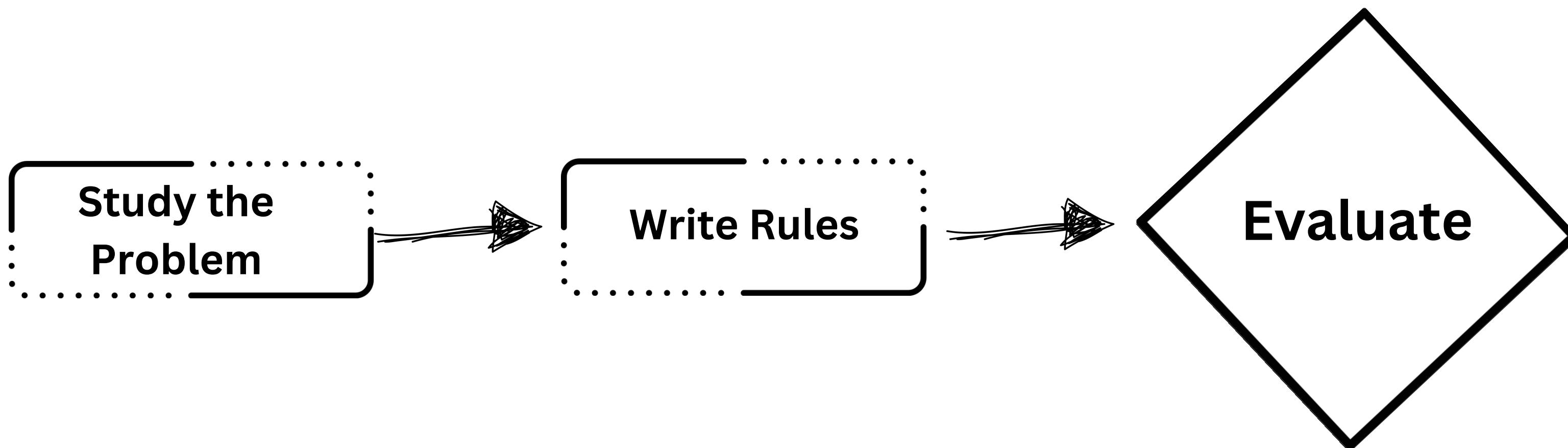


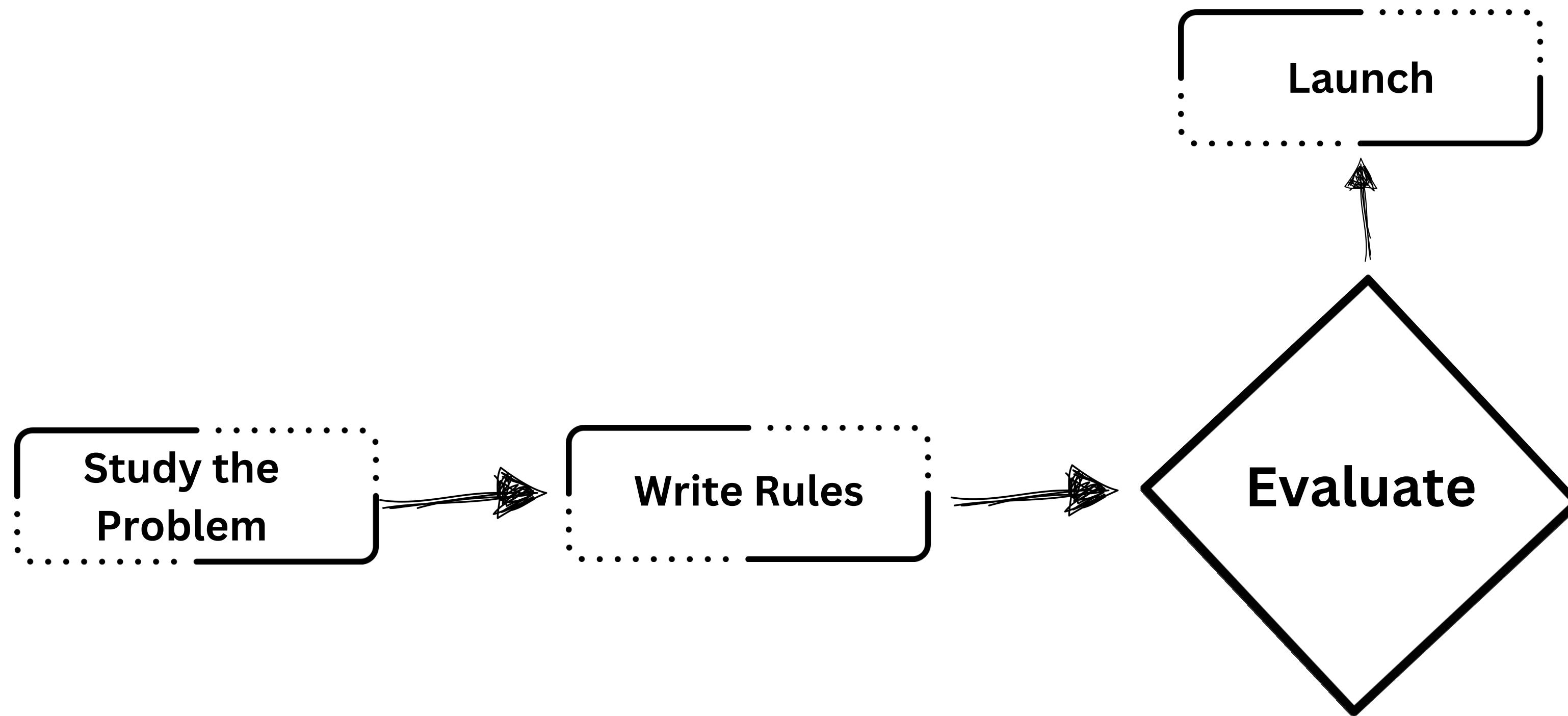
**(such as “4U”, “credit card”,  
“free”, and “amazing”)**

# The traditional approach

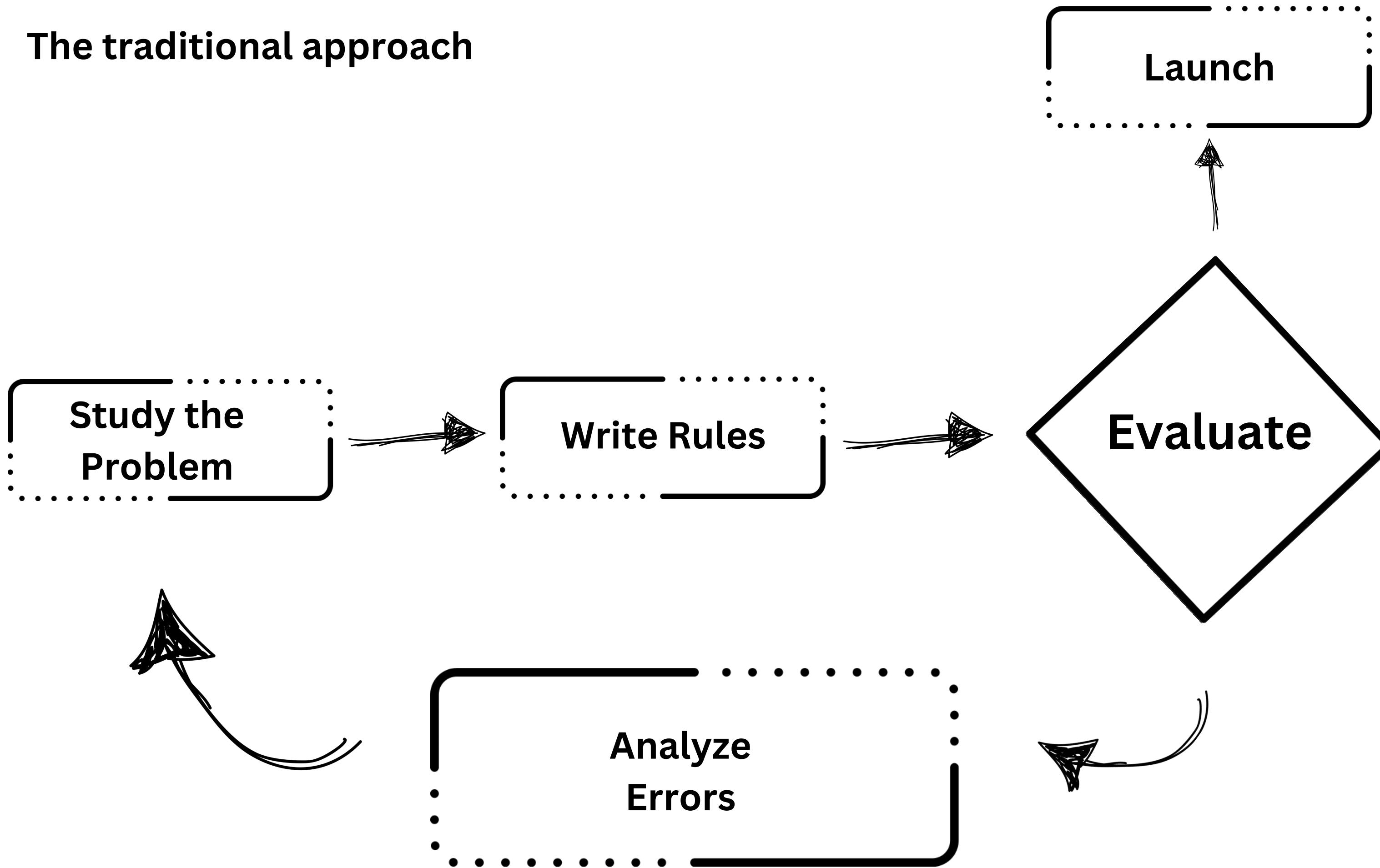
**Study the  
Problem**



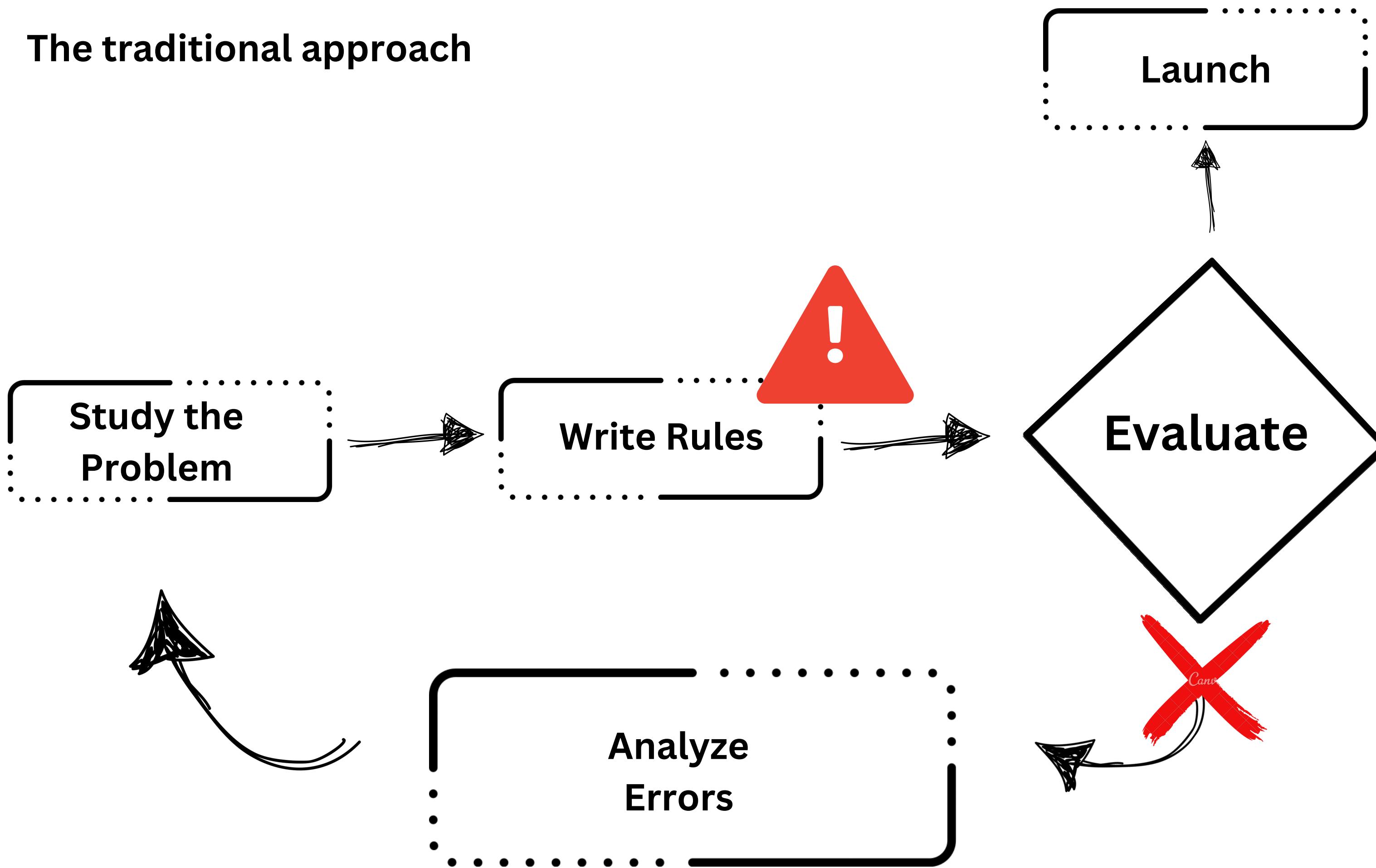




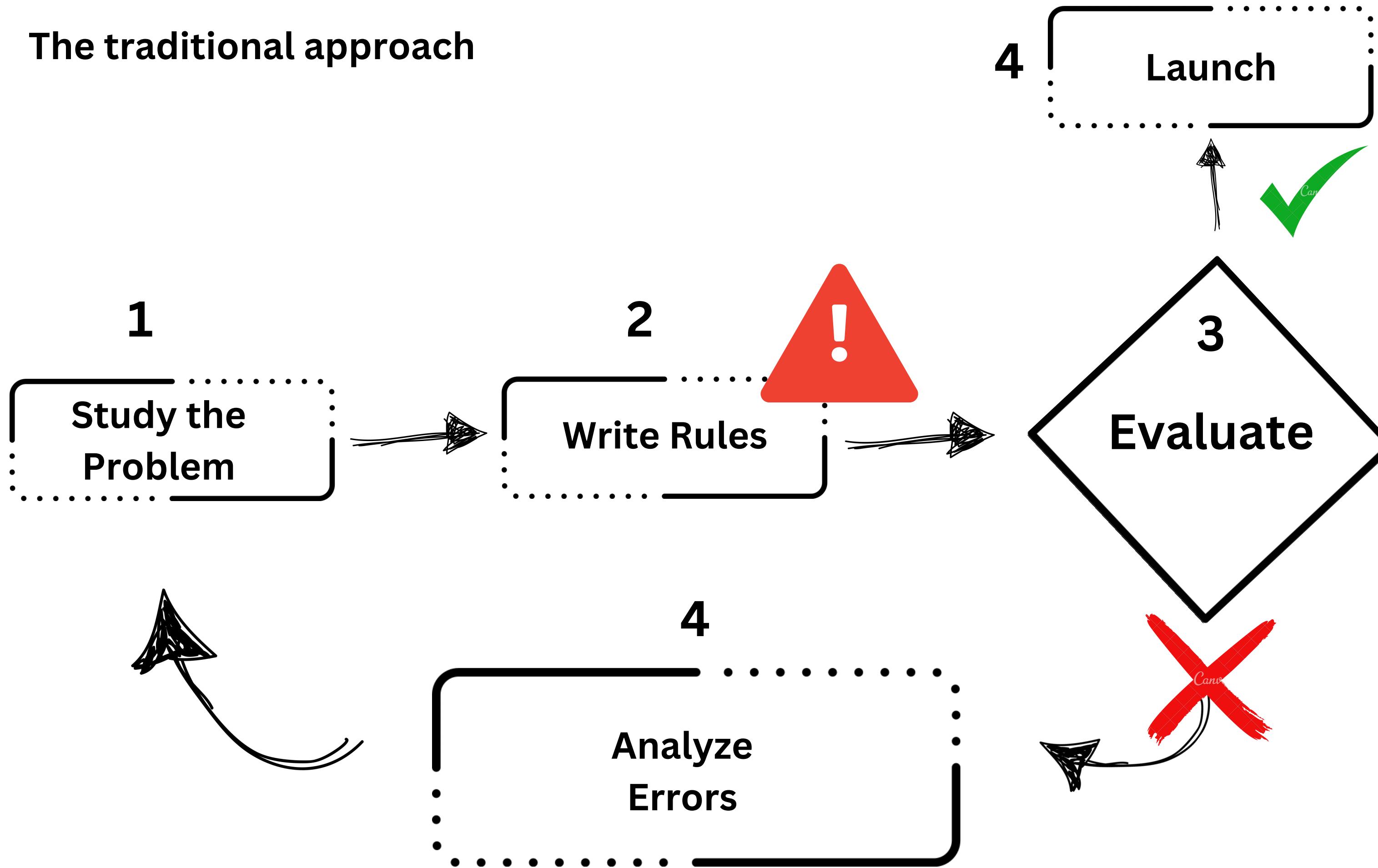
## The traditional approach



## The traditional approach

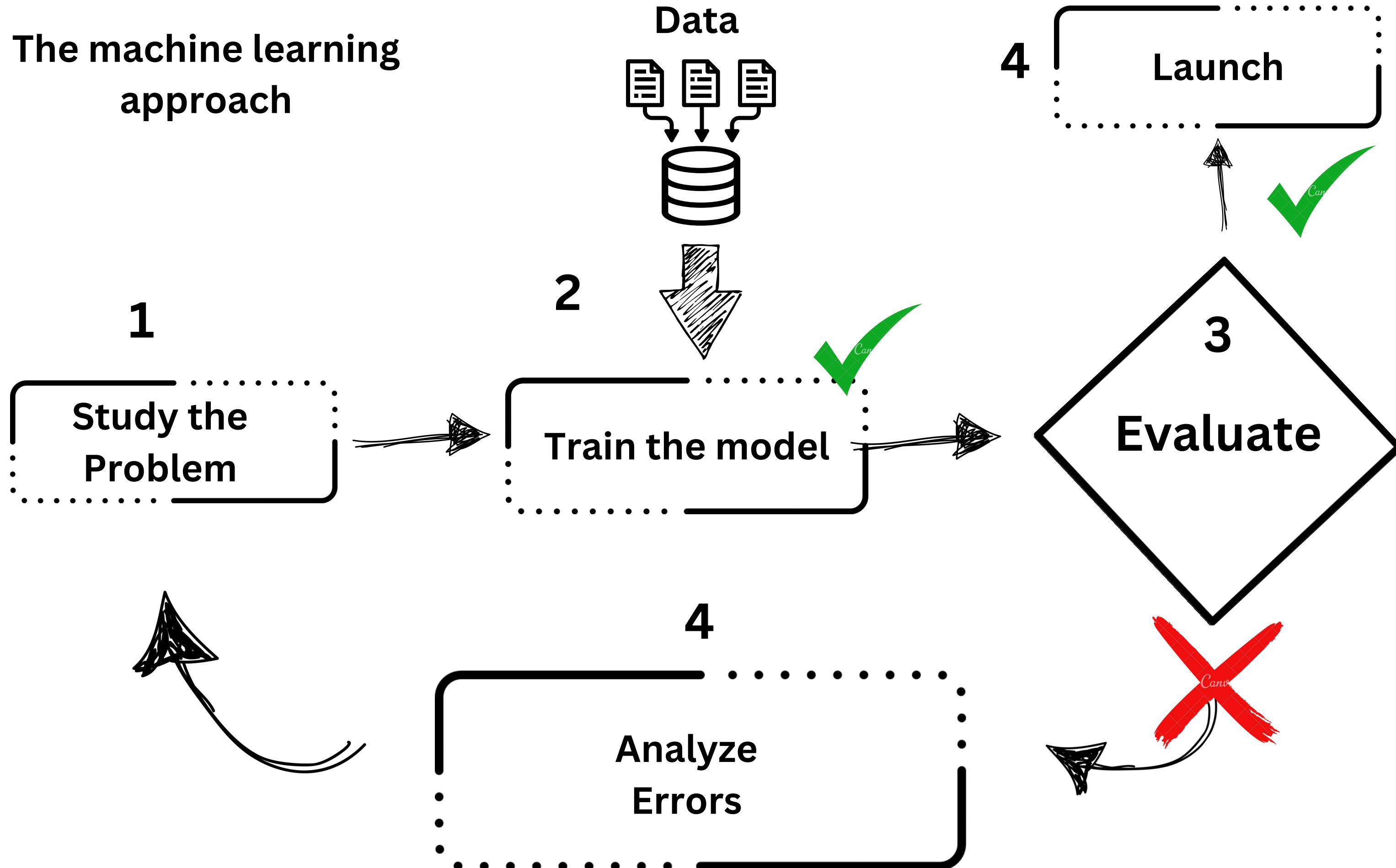


## The traditional approach

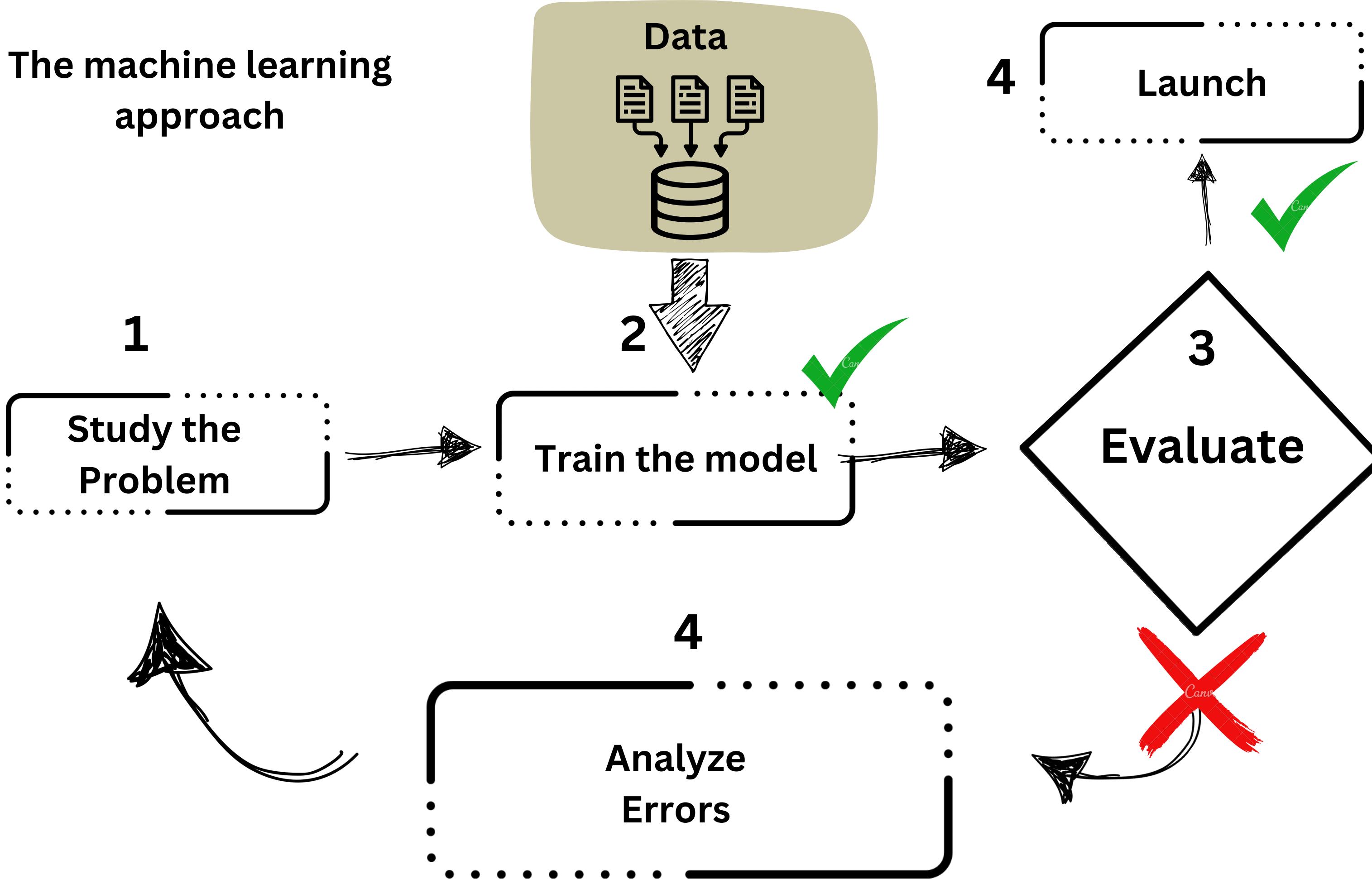


# The machine learning approach

# The machine learning approach

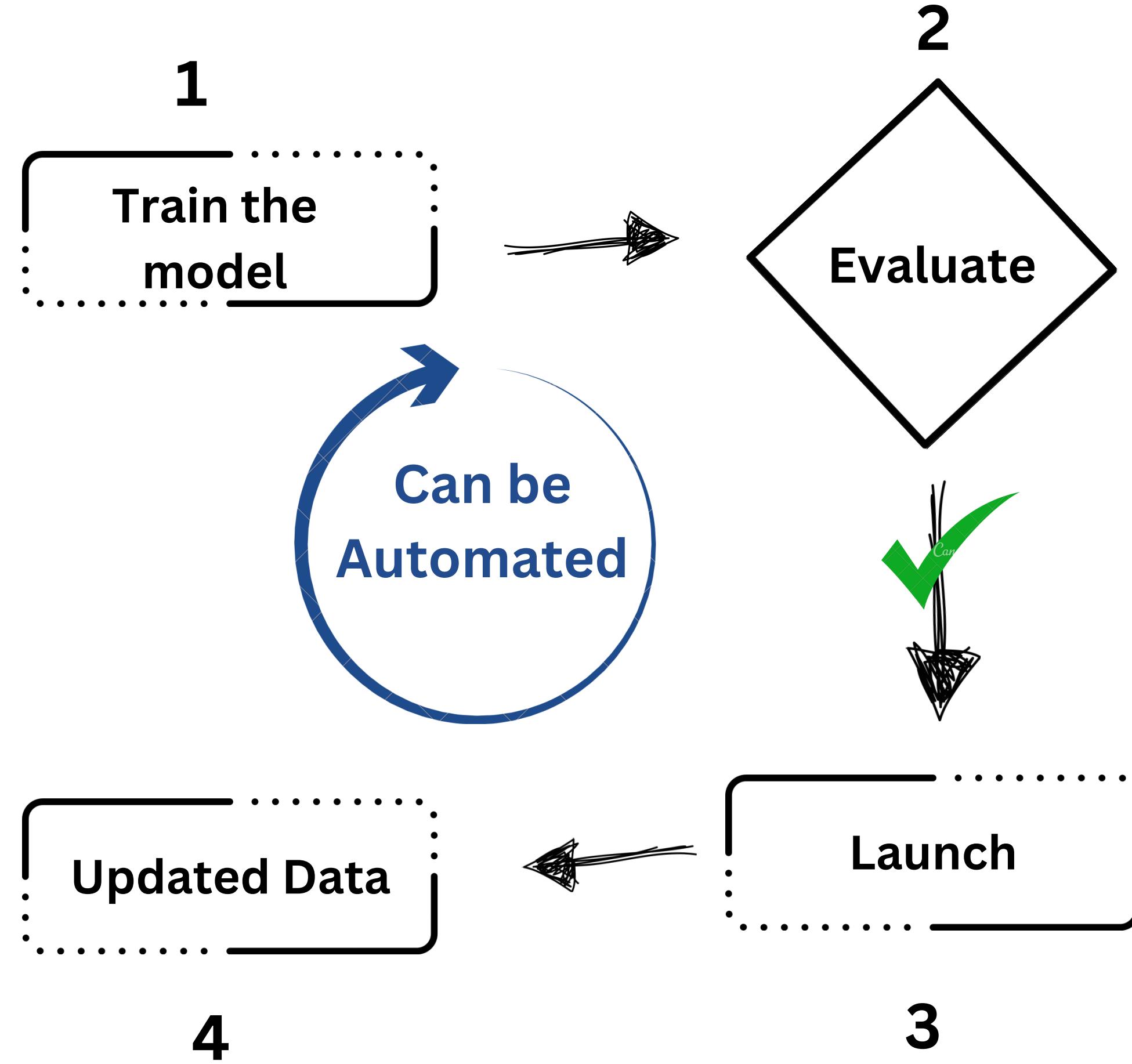
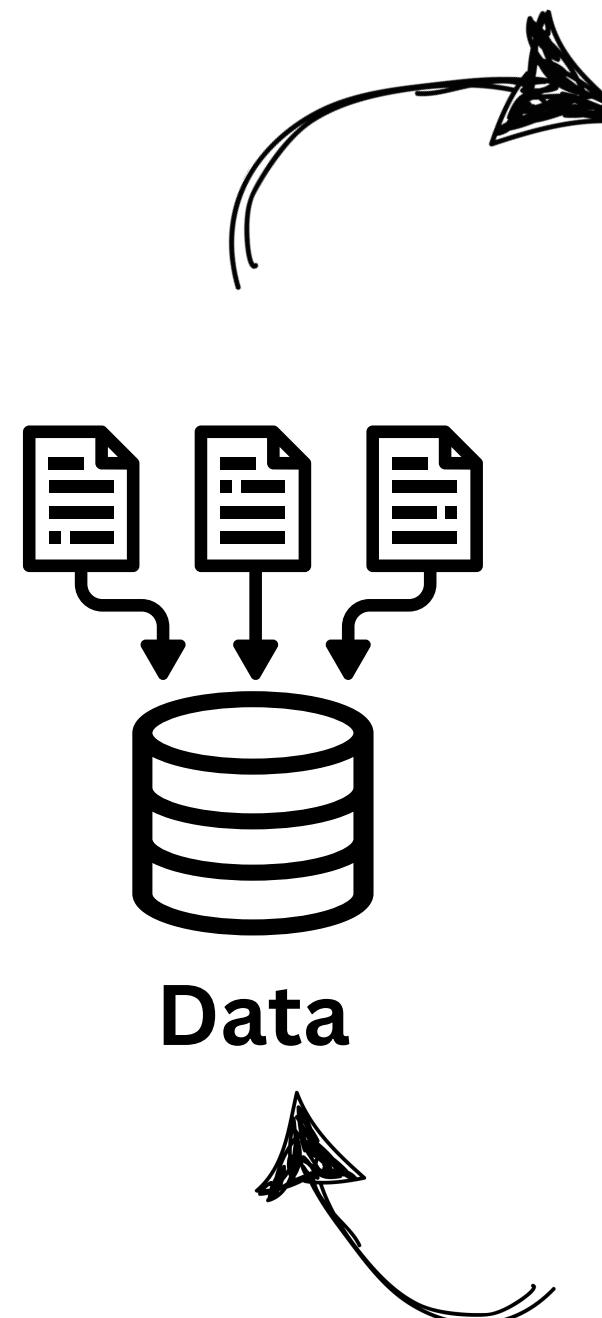


# The machine learning approach



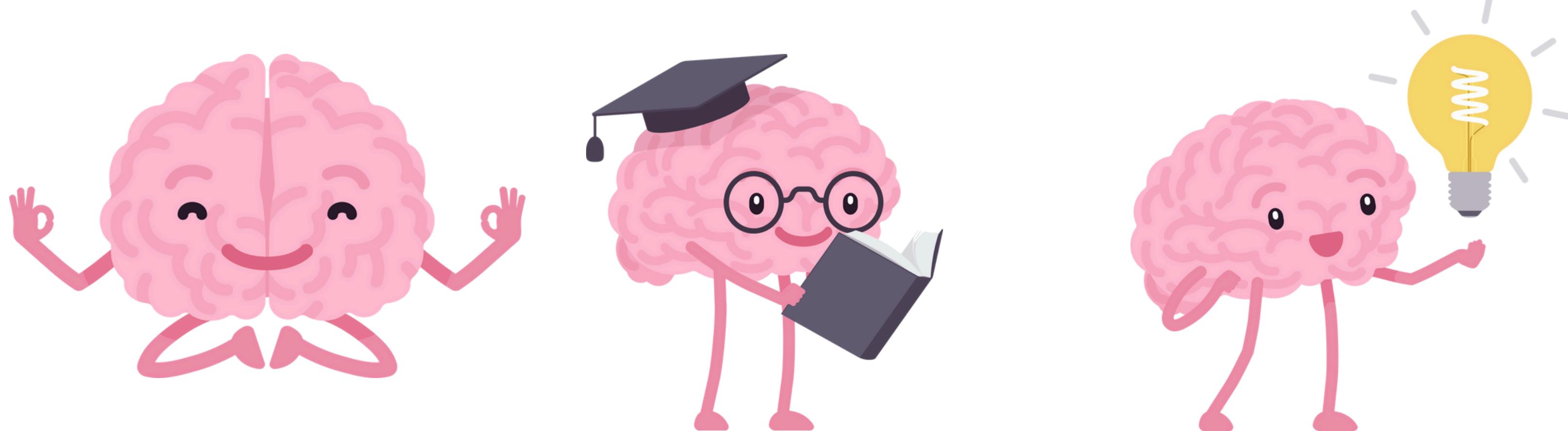
Automatically adapting to change

Automatically adapting  
to change

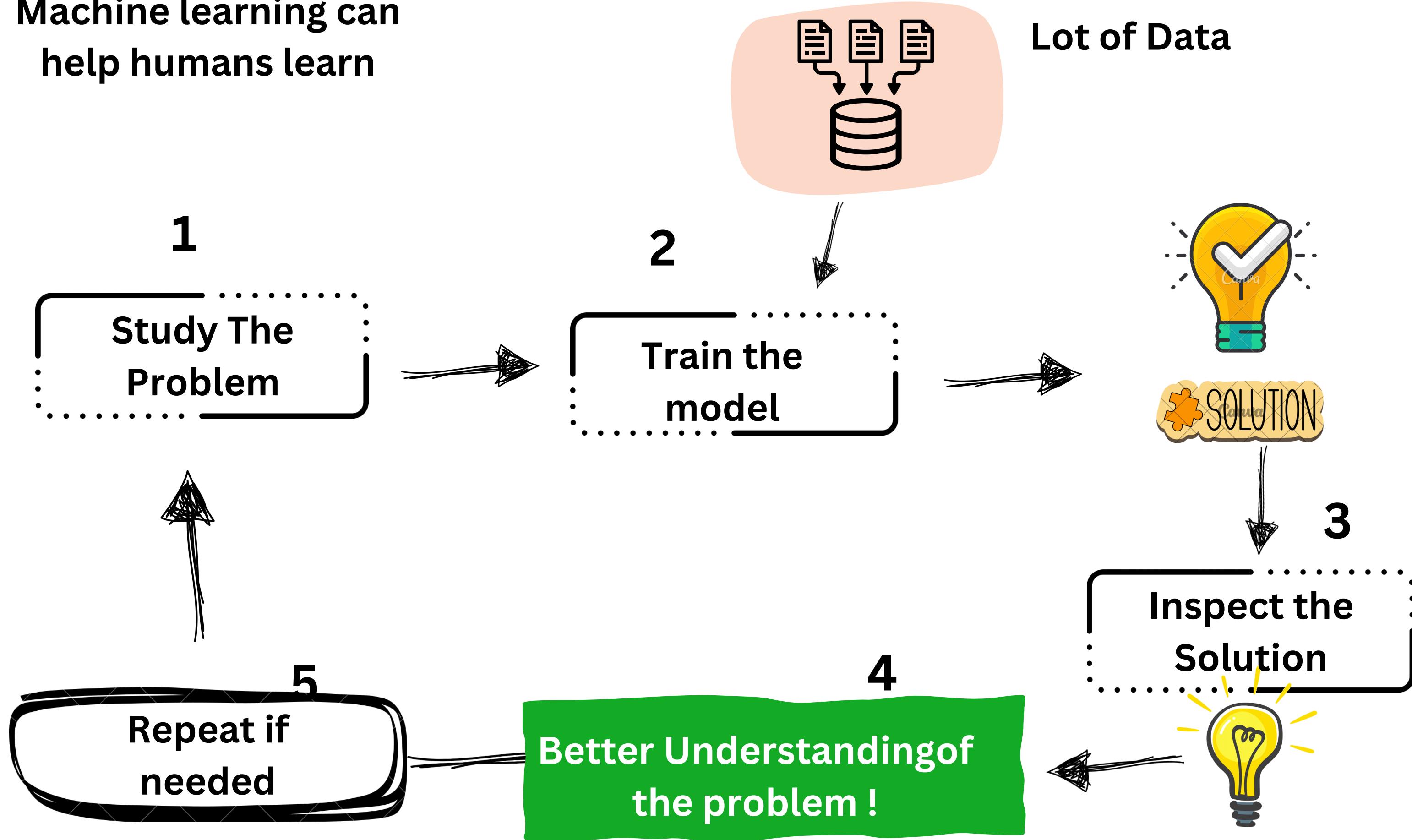


# Can be Automated

Machine learning can help humans learn



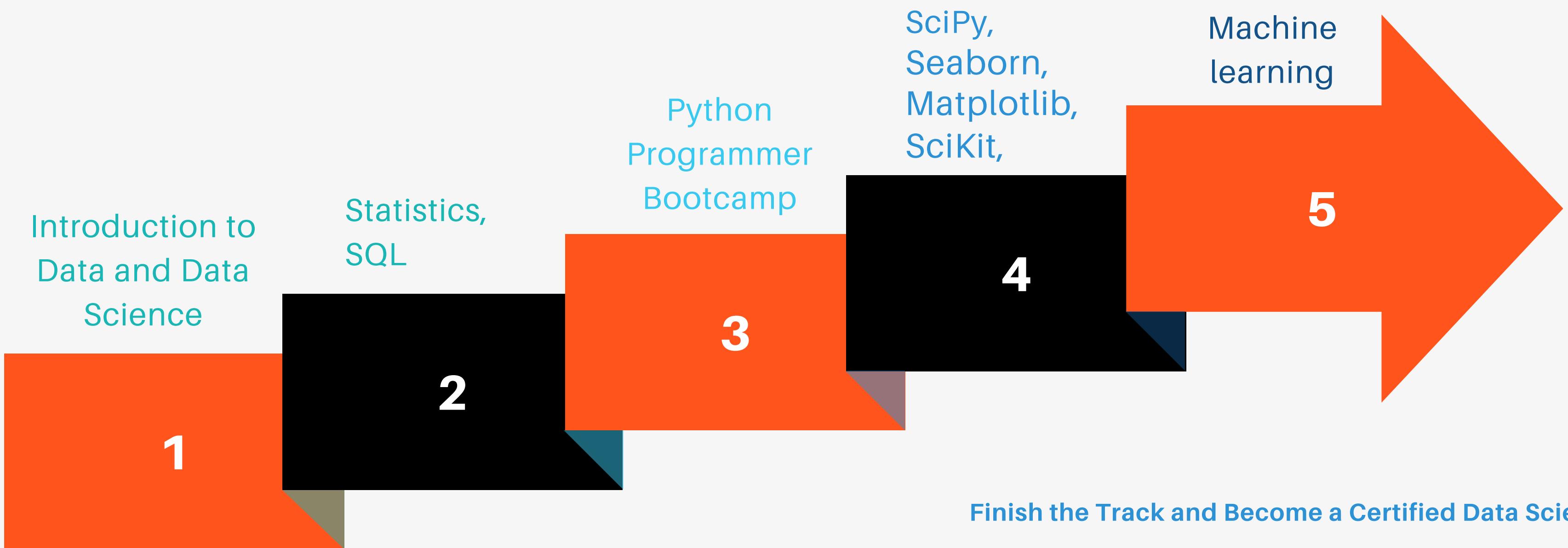
Machine learning can  
help humans learn



# **What Is the Curriculum of a Data Science Course?**

# DATA SCIENTIST CAREER TRACK

Develop the top-level data science skills needed to become the most sought-after professional that drives value in any organization.



Once you acquire the certificates successfully, you will possess the necessary skills for a job as a data scientist, and qualifying for a position will be one step closer.

# Project And Case Studies

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Predictive Maintenance in Manufacturing

Customer Churn Prediction

Credit Scoring Model

Healthcare Data Analysis

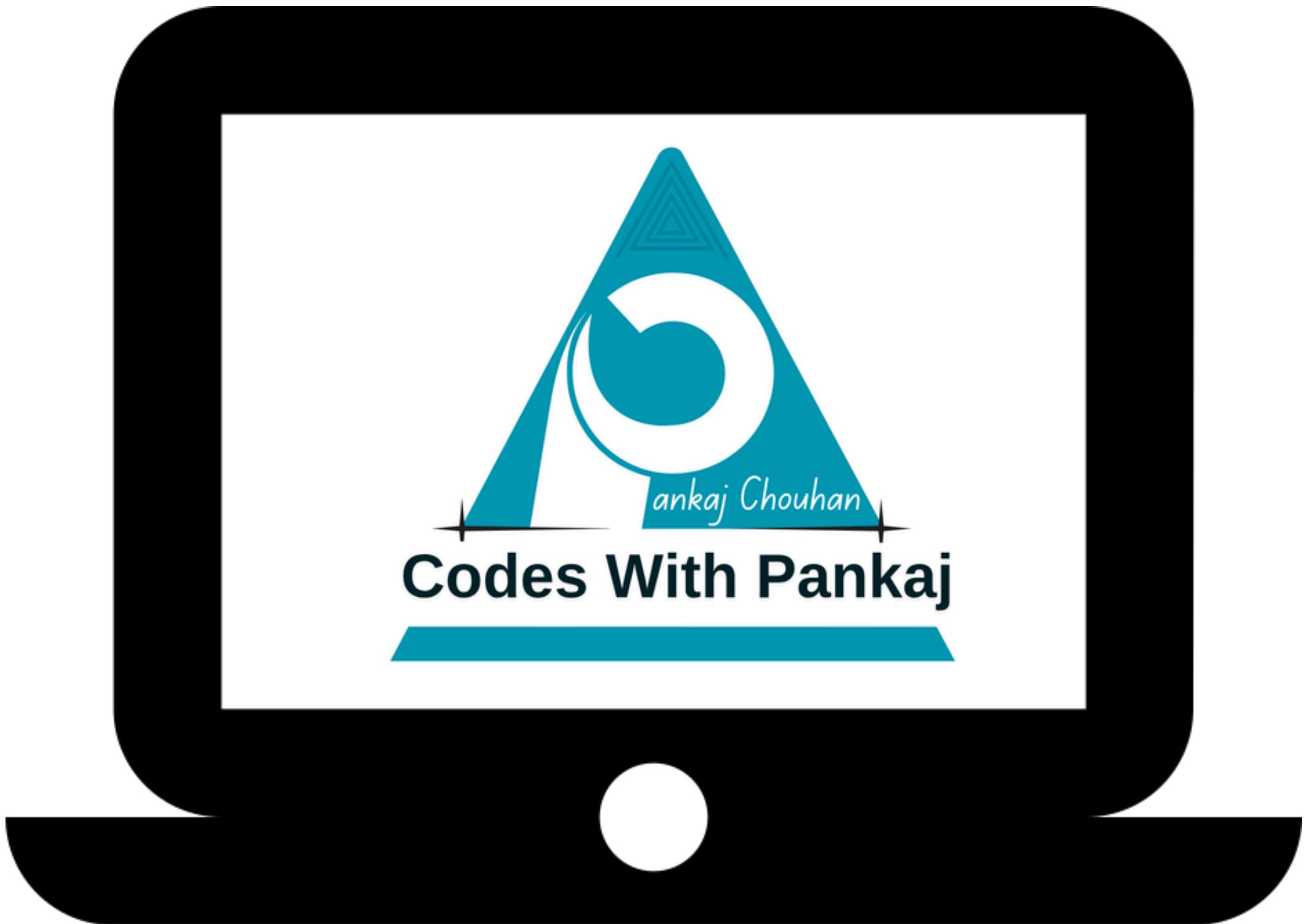
**Fraud Detection in Finance**

Image Recognition for Autonomous Vehicles

Supply Chain Optimization

When working on a data science project or case study, it's essential to clearly define the problem, gather and preprocess relevant data, choose appropriate algorithms, and evaluate the model's performance. Additionally, effective communication of findings and insights is crucial.

# **Is Data Science Hard to Learn?**



# Is Data Science Hard to Learn ?

Learning Data Science can feel challenging at first because it combines different skills like math, programming, and understanding data. For beginners, topics like statistics or machine learning may seem tough. However, with practice and the right resources, it becomes easier. There are many courses, tutorials, and projects that can help you understand concepts step-by-step. If you stay consistent, you'll find Data Science more manageable and rewarding as you go along.

# **What's the Future of Data Science?**



Gather data



Date ranges



Deal with missing values  
and abnormalities



Figure out the amount  
of data required



Normalizing the data



NumPy  
pandas

Pre-processing

# Number of Offers per Industry



# Data Science Jobs

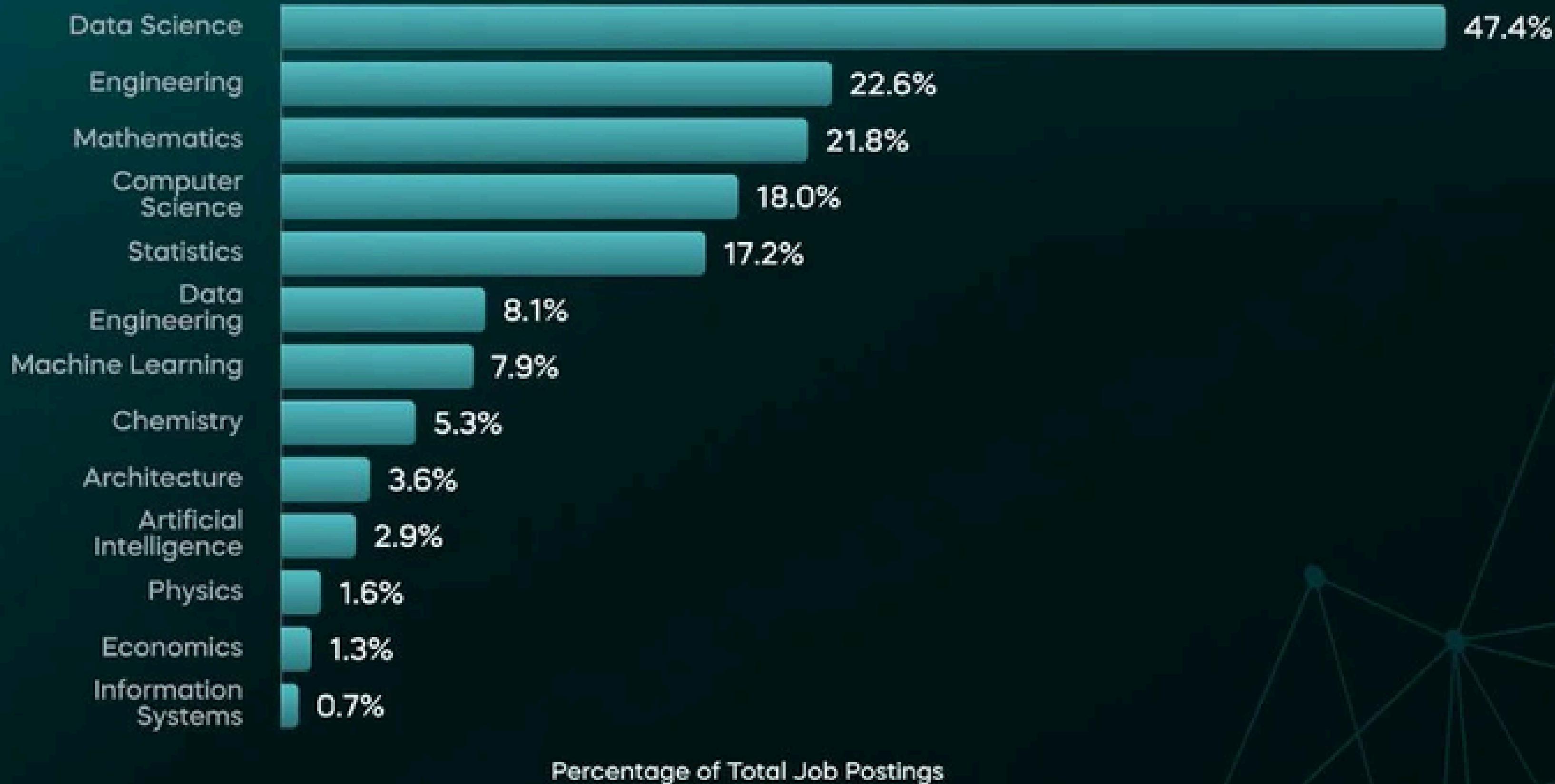
- Data Science & Analytics (14544)
- Product Management (474)
- Engineering - Software & QA (10653)
- Other (467)
- Marketing & Communication (1368)
- Research & Development (442)
- Customer Success, Service ... (1334)
- BFSI, Investments & Trading (342)
- Sales & Business Developme... (1297)
- Production, Manufacturing ... (342)
- Finance & Accounting (1042)
- Teaching & Training (331)
- Human Resources (601)
- Procurement & Supply Chain (320)
- IT & Information Security (516)
- Quality Assurance (246)
- Consulting (488)
- Healthcare & Life Sciences (211)
- Project & Program Manage... (485)
- UX, Design & Architecture (185)

<https://www.naukri.com/data-science-jobs?k=data%20science>

# Data Scientist Salaries by Location

Location	Average Salary	Salary Adjusted for Cost of Living
Houston-The Woodlands-Sugar Land, TX	\$137,648	\$123,010
San Francisco-Oakland-Hayward, CA	\$166,519	\$121,193
Seattle-Tacoma-Bellevue, WA	\$146,088	\$119,941
Atlanta-Sandy Springs-Roswell, GA	\$117,002	\$110,171
San Jose-Sunnyvale-Santa Clara, CA	\$153,535	\$109,668
Bridgeport-Stamford-Norwalk, CT	\$144,444	\$109,179
New York-Newark-Jersey City, NY-NJ-PA	\$146,067	\$108,681
Boston-Cambridge-Newton, MA-NH	\$132,922	\$108,596
Austin-Round Rock, TX	\$119,359	\$108,410
Chicago-Naperville-Elgin, IL-IN-WI	\$123,713	\$108,141
Los Angeles-Long Beach-Anaheim, CA	\$136,645	\$105,355
Philadelphia-Camden-Wilmington, PA-NJ-DE-MD	\$122,524	\$104,991
Dallas-Fort Worth-Arlington, TX	\$115,862	\$104,947
St. Louis, MO-IL	\$103,798	\$103,694
San Diego-Carlsbad, CA	\$127,910	\$99,852
Washington-Arlington-Alexandria, DC-VA-MD-WV	\$130,222	\$99,255
Des Moines-West Des Moines, IA	\$102,138	\$98,021
Baltimore-Columbia-Towson, MD	\$113,178	\$95,751
Tampa-St. Petersburg-Clearwater, FL	\$95,111	\$86,543

# Degrees Mentioned in Data Scientist Job Postings



# **What Are the Job Opportunities in Data Science?**

**Data Scientist :**

Finds patterns and insights in data to help make decisions.

## **Data Analyst :**

Analyzes data and creates visual reports for companies.

**Machine Learning Engineer :**

Builds models that help computers make predictions.

## **Data Engineer :**

Manages and organizes data to keep it ready for analysis.

**Business Analyst :**

Uses data to solve business problems and improve performance

## **Any Other Questions About Data Science ?**

### **What tools do Data Scientists use?**

They often use Python, R, SQL, Jupyter Notebooks, and visualization tools like Tableau or Power BI.

### **How does Data Science work with AI and ML ?**

Data Science provides data and analysis methods that help AI and ML models learn and improve over time.

### **How does Data Science help businesses ?**

Data Science helps businesses understand their customers, predict trends, and make better decisions using data.

### **How can I start learning Data Science?**

Start by learning a programming language like Python and basic statistics.

Many online courses cover these topics in an easy-to-follow way. Working on small projects with real data will also help you learn faster.

# **What Are the Salary Packages for Data Science Professionals?**

## **Entry-Level :**

In the US, salaries usually start from around \$70,000 - \$90,000 per year.

## **Mid-Level :**

Around \$90,000 - \$120,000 per year.

## **Senior-Level :**

Over \$120,000 per year.

# **Exclusive Offer for Attending Participants**