

Grade 7

FathomKey

AI Series

Future -
Ready kids

The AI ADVENTURE



Think
Smart
Build
Better

An Interactive Journey into AI and Algorithms

NEP 2020 • NCF-SE 2023 • CT & AI Competency Aligned



Young
Problem Solver

I solve problems
step by step.



Technology
Explorer

I explore technology
and use it wisely



Responsible Digital
Citizen

I use technology
safely and kindly

Authored by alumni of IIM Bangalore and University of Texas

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The AI Adventure -Grade 7

First Edition: 2026

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Curriculum Alignment

This book is part of a grade-wise AI learning programme developed for Indian schools. Its content is informed by the principles of **NEP 2020**, **NCF** and relevant **CTAI** guidance. It supports the development of computational thinking, problem-solving, digital literacy, creativity and responsible use of Artificial Intelligence across school curricula.

LMS Support

This book is supported by the FATHOMKEY Learning Management System (LMS), which provides digital learning resources, interactive activities, assessments and additional support for students and teachers. LMS access is available through registered schools. For access and assistance, visit <https://lms.fathomkey.in> or contact info@fathomkey.in.

Disclaimer

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AI for everyone.

The AI ADVENTURE

Grade 7

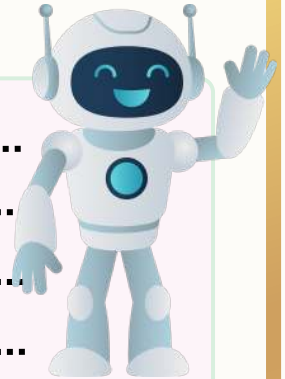
An Interactive Journey into
AI and Algorithms

Name:

Class: Sec:

Subject: Roll No:

School:



CTAI STUDENT BOOK

FfathomKey

Authored by alumni of IIM Bangalore and University of Texas

PREFACE

Artificial Intelligence is changing how people study information, recognise patterns, solve problems and make decisions. To participate confidently in this changing world, students must understand how AI works, examine its outputs carefully and use it responsibly.

AI for Young Minds – Grade 7 develops this understanding through a structured and age-appropriate learning journey. The book introduces the three major AI domains—Data Science, Computer Vision and Natural Language Processing—and explains how each domain works with different types of data.

Students explore how data is collected, organised, represented and analysed. They learn about records, fields, features, labels and datasets, along with common data problems. Tables, charts and visualisations help learners recognise patterns, compare evidence and draw meaningful conclusions.

The book introduces important AI learning tasks such as classification, regression and clustering. Students examine how AI systems learn from data, generate predictions and support decisions. They also learn that correlation does not always prove causation and that AI results require careful human interpretation.

Learners investigate how computers work with images, text and language. They explore image classification, object detection, optical character recognition, sentiment analysis, translation, summarisation and generative AI. Simple Python activities encourage students to apply logically and build confidence through practical exploration.

Responsible AI is integrated throughout the book. Students examine fairness, bias, privacy, consent, security, transparency, accountability, digital footprints, deepfakes and copyright. They learn to verify AI-generated content, protect personal information and involve responsible adults in important decisions.

Activities, case studies, exercises and AI Labs encourage students to investigate problems before selecting technology. Learners use fictional, anonymous or teacher-approved data, compare results, identify limitations and explain the evidence behind their conclusions.

The concluding AI Domain Project Studio brings together problem identification, domain selection, data planning, responsible design and human review. It develops logical thinking, creativity, collaboration, communication and responsible digital habits.

We hope this book inspires every learner to question thoughtfully, explore confidently and use Artificial Intelligence with curiosity, care and responsibility.

— **Team Fathomkey**

Inside the Series

What You Will Learn

The section tells you what you will learn in the chapter and the skills you will develop.

Activity Corner

Enjoy hands-on activities, drawing, puzzles, and mini projects to reinforce your learning.

Byte's Smart Tip

Byte shares smart tips to help you to solve problems using Computational Thinking.

Real-Life Connection

Discover how Computational Thinking helps us to solve problems in our daily lives.

Let's Begin with Introduction

Every chapter begins with an interesting introduction that connects the lesson to everyday life.

Definition

Learn important words and their meanings in simple and easy language.

Did You Know?

Read amazing facts that make learning more interesting and fun.

AI Connection

Explore how Artificial Intelligence and smart machines use instructions to complete tasks.

Think About It

Answer thought-provoking questions that encourage observation, reasoning, and discussion.

Exercise Time

Practice what you have learned through fun and engaging questions.

Challenge Yourself

Apply your learning through HOTS, analytical thinking, and real-life problem-solving activities.

Let's Revise

Quickly revise the chapter using a summary, glossary, and a simple mind map.

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Unit 5 - My Final AI Project

Chapter 10 - AI Project Studio

- ClearNotice AI — Human-reviewed school-notice clarity assistant
- ShadeSmart AI — Outdoor reading-area glare advisory

AI Domains and Applications



Learning Outcomes

- ✓ Revise the meaning and important abilities of Artificial Intelligence.
- ✓ Distinguish an AI system from rule-based automation.
- ✓ Explain the meaning of an AI domain.
- ✓ Identify Data Science, Computer Vision and Natural Language Processing as major AI domains.
- ✓ Connect different types of input data with the correct AI domain.
- ✓ Recognise systems that use more than one AI domain.
- ✓ Describe common outputs produced by AI systems.
- ✓ Explain why humans must review important AI-assisted decisions.
- ✓ Recognise the limitations of domain-specific AI systems.

Chapter Introduction



Artificial Intelligence is not a single machine that can perform every kind of intelligent task. An AI system designed to study images may not understand a written paragraph. A system trained to analyse numerical data may not be able to recognise an object in a photograph. Different AI systems are designed for different types of data and different kinds of tasks. To organise these specialised abilities, Artificial Intelligence is divided into areas called **AI domains**.

In this chapter, you will study three major AI domains:

1. **Data Science**
2. **Computer Vision**
3. **Natural Language Processing**

You will learn how each domain works with a particular type of data, what kinds of outputs it can produce and how different domains can work together inside one AI-supported system.

“Understanding the data is the first step towards choosing the right AI domain.”

AI Explorer: Three Kinds of Clues

A community lake-monitoring team receives three folders of information.

- **Folder A** contains water-temperature readings, rainfall measurements and dates.
- **Folder B** contains photographs of the lake surface and surrounding plants.
- **Folder C** contains written observations submitted by volunteers.

The team wants to organise this information and identify changes that may require an expert inspection.



Study the three folders and think about the following questions:

1. Can one type of AI process all three folders in exactly the same way?
2. Which folder contains numerical or tabular data?
3. Which folder would require an AI system to study images?
4. Which folder contains human language?
5. Why should an environmental expert check the AI system's findings?

You will return to this situation later in the chapter.

A Brief Revision of Artificial Intelligence

Artificial Intelligence, or **AI**, is a field of technology in which computer systems are designed to perform tasks that usually require abilities associated with human intelligence.

Depending on their design and training, AI systems may:

- identify patterns in data;
- classify information into categories;
- interpret written or spoken language;
- examine visual information;
- estimate a likely future value;
- generate text, images or other content; or
- recommend possible actions.

An AI system does not automatically possess human understanding. It processes data using algorithms, models and instructions created or selected by people.

The Basic Structure of an AI System

Most AI-supported systems contain the following elements:

Element	Meaning	Example
Input	Information provided to the system	A table, photograph or written message
Processing	Rules or a trained model that examines the input	Finding patterns or identifying features
Output	The result produced by the system	A category, score, estimate or summary
Human role	The person who checks or uses the result	A teacher, researcher, editor or inspector

Key Definitions

- **Artificial Intelligence:** Technology that enables computer systems to perform tasks such as recognising patterns, processing language, making predictions or generating outputs.
- **Input:** The data or information given to a computer system for processing.
- **Output:** The result produced after the system processes an input.

Think and Explain



If an AI system produces an output, does that automatically make the output correct? Explain your answer.

Did You Know?



Two systems may use the same type of data but perform different tasks. For example, one system may use a table of readings to find unusual values, while another may use the same table to estimate a future value.

AI SYSTEMS AND RULE-BASED AUTOMATION

Is Every Automated System an AI System?

A machine can perform a task automatically without using Artificial Intelligence.

Automation means using technology to complete a task with little or no repeated human effort. Some automated systems follow fixed instructions written by a programmer. These systems are called **rule-based systems**.

A rule-based system may use instructions such as:

- IF the entered code is correct, THEN open the digital file.
- IF the room temperature rises above a fixed level, THEN switch on the fan.
- IF a book is returned after its due date, THEN calculate the late fee.

The system follows the same programmed rule whenever the condition occurs. It does not learn a pattern from examples.

How an AI System Is Different

An AI model can be trained using examples. During training, it examines the examples and adjusts its internal patterns. It then uses those learned patterns to process new inputs.

For example, suppose a community centre receives hundreds of written maintenance requests. A trained AI system might classify each request as:

- furniture;
- lighting;
- plumbing;
- cleaning; or
- general enquiry.

The programmer does not have to write a separate rule for every possible sentence. The model studies labelled examples and learns language patterns associated with each category.