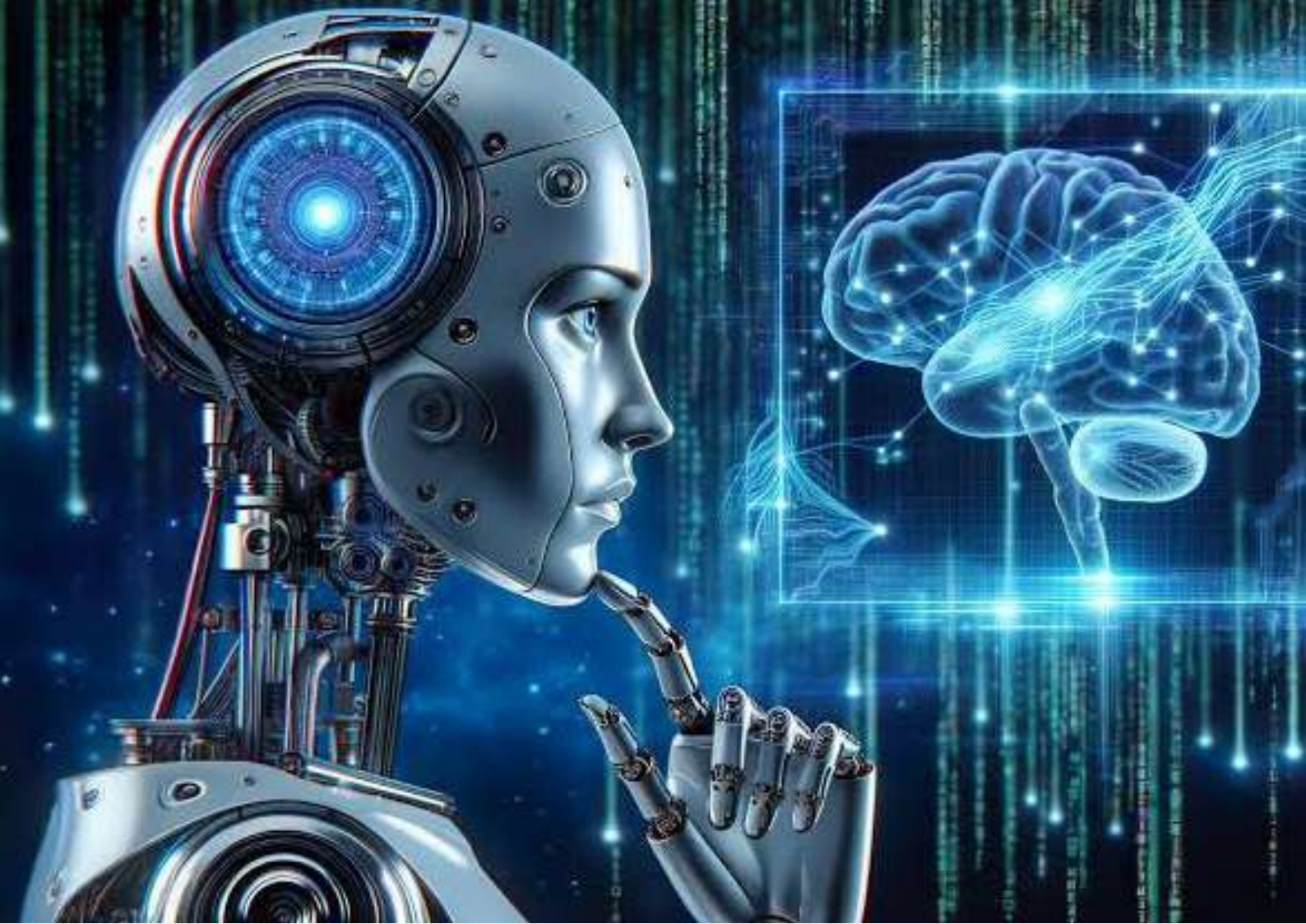




ARTIFICIAL INTELLIGENCE WORKBOOK

for 7-11-Year-Olds

Editors

Yaren Ülger

Orta Doğu Teknik Üniversitesi

Kerim Aşık

Orta Doğu Teknik Üniversitesi

Mercan Üstün

Orta Doğu Teknik Üniversitesi

Content

Artificial intelligence for ages 7-11



Preface

**Department: Computer Education
and Instructional Technology**

**Course: CEIT 207 - Design
and Use of Instructional Material**

Instructor: Zahide YILDIRIM

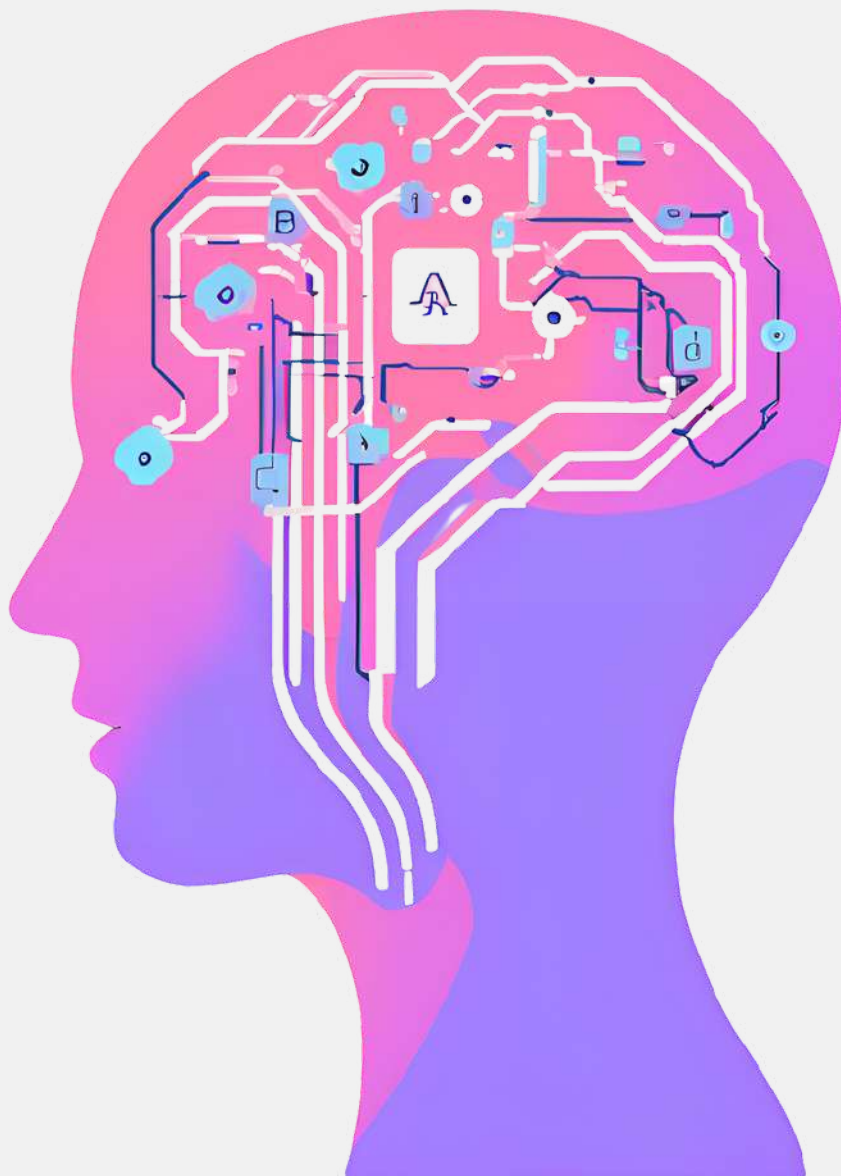
**Students: Yaren Ülger, Kerim Aşık,
Mertcan Üstün**

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Abstract

This workbook introduces the fundamental concepts of artificial intelligence (AI) to students aged 7-11. Through engaging and interactive materials, learners will explore AI applications, distinguish between AI types, and understand ethical considerations. By completing this workbook, students will gain a foundational understanding of AI, fostering curiosity and critical thinking.



Glossary

- **Artificial Intelligence (AI):** The ability of machines to simulate human intelligence.
- **Ethics:** Moral principles that govern behavior.
- **Privacy:** The right to control personal information.
- **Deep learning:** A type of machine learning that uses neural networks with many layers to analyze complex data patterns.
- **Analyze:** To examine something in detail to understand its structure or meaning.
- **Navigation:** The process of planning and controlling the movement of a vehicle or person from one place to another.
- **Fair:** Treating people equally without favoritism or bias.
- **Password:** A secret word or phrase used to authenticate a user's identity.
- **Privacy:** The right to keep one's personal information, actions, or communications private and free from public scrutiny or unauthorized access
- **Music composition:** The process of creating and arranging original music, typically involving the creation of melodies, harmonies, and rhythm

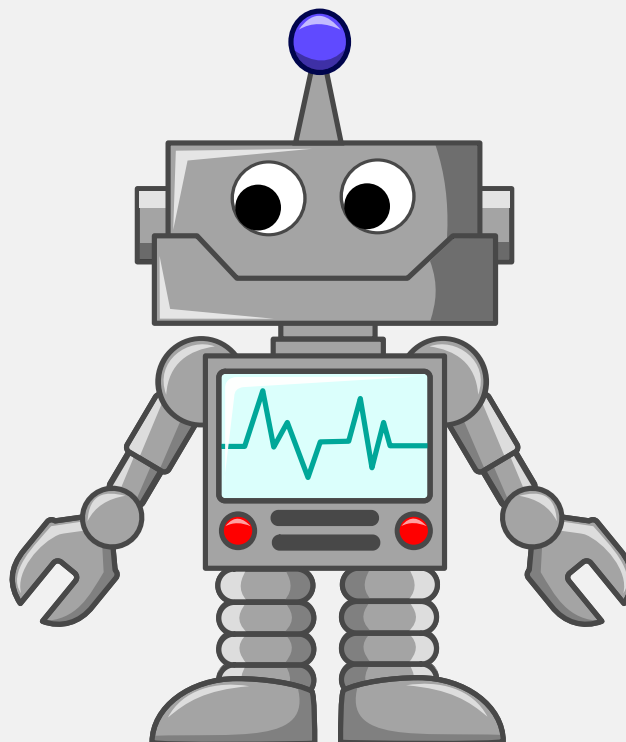


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Objectives

This workbook introduces young learners (ages 7-11) to the exciting world of Artificial Intelligence (AI) in a fun and engaging way. Through interactive activities, colorful illustrations, and simple explanations, children will:

- Recognize what AI is: Recognize about how computers can be "taught" to think and acquire like humans.
- Identify why AI is important: Identify how AI helps us in everyday life, from playing games to helping doctors.
- Explore different types of AI: Explore about the different ways AI can be used, such as recognizing faces and understanding language.
- Recognize the importance of privacy: Recognize about what privacy is and why it's important to protect our personal information.
- Explore how AI interacts with privacy: Explore how AI can both help and potentially harm our privacy.
- Explore how to protect their own privacy online: Explore simple steps to keep their personal information safe.
- Gain a basic knowledge of how AI works: Explore simple concepts like machine learning and data in an age-appropriate way.
- Explore AI in the world of games: Explore how AI makes games more challenging and fun.

This workbook aims to spark children's curiosity about AI, foster a positive attitude towards technology, and equip them with basic knowledge about this rapidly evolving field.

What is Artificial Intelligence?

Artificial Intelligence (AI) is a technology that allows computers and machines to think, learn, and make decisions like humans. This means that a computer can solve a problem or perform a task just like a human would. For example, thanks to AI, phones can give us directions, find our favorite songs, or suggest products on shopping websites.

AI works with data. This means that computers learn by looking at lots of information and predicting what might happen next. For example, an AI can look at past football matches to predict which team might win.



We see AI in many places in our daily life. Voice assistants on smartphones, apps that suggest cartoons, and even some toys use AI. AI is here to make things easier and more fun.

But AI is not just for fun; it is also used to help people. For example, doctors use AI to detect diseases. The AI technology will become even more common in the future and teach us many new things!

Why is AI Important?

AI can do things faster and better than humans in some areas. For example, it can look through thousands of pictures to find a match in seconds.

Activity: Draw a robot and give it a special AI skill! What will your robot do?



The first robot toy was created in 1954! It was called "Unimate".



Examples of AI in Daily Life

Imagine a world where computers can think and learn!

That's what Artificial Intelligence (AI) is all about. It's like giving computers a brain that can do amazing things, just like humans do!

Here are some cool ways AI is already in our lives:

Talking to your phone: Ever asked Siri or Google Assistant for the weather? That's AI! It understands your words and gives you the answer.

Movie and song suggestions: Netflix and YouTube know what you like to watch. That's AI suggesting the best movies and songs just for you!

Smart homes: Lights turning on automatically, the heater keeping you warm – that's AI making your home comfy!

Finding the fastest way to school: Google Maps uses AI to find the quickest route, avoiding traffic jams.

Unlocking your phone with your face: That's AI keeping your phone safe and sound!



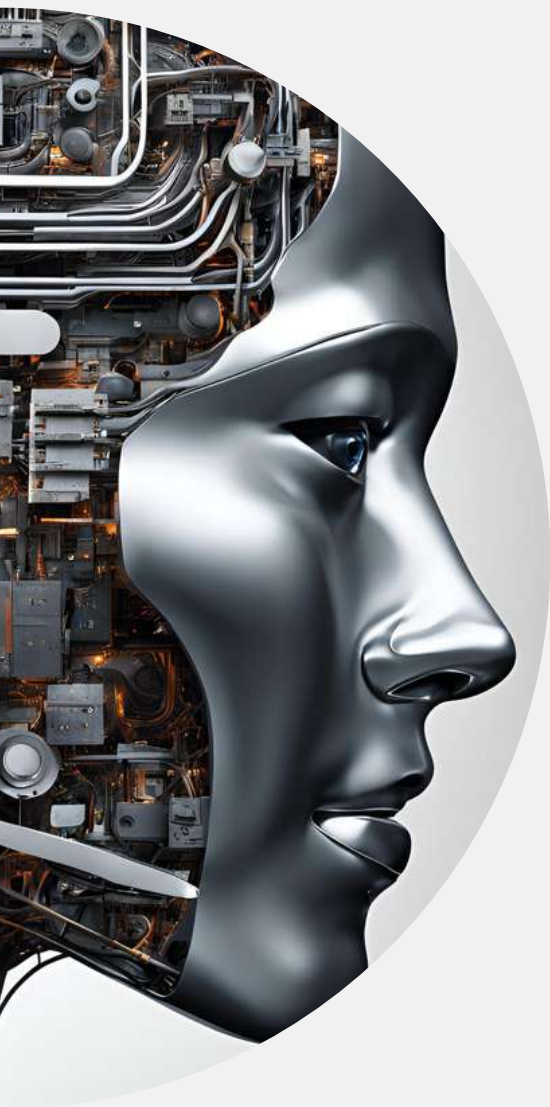
Helping doctors: AI can help doctors find illnesses faster and make sure everyone gets better.

Keeping your inbox clean: AI sorts emails, so you only see the important ones.

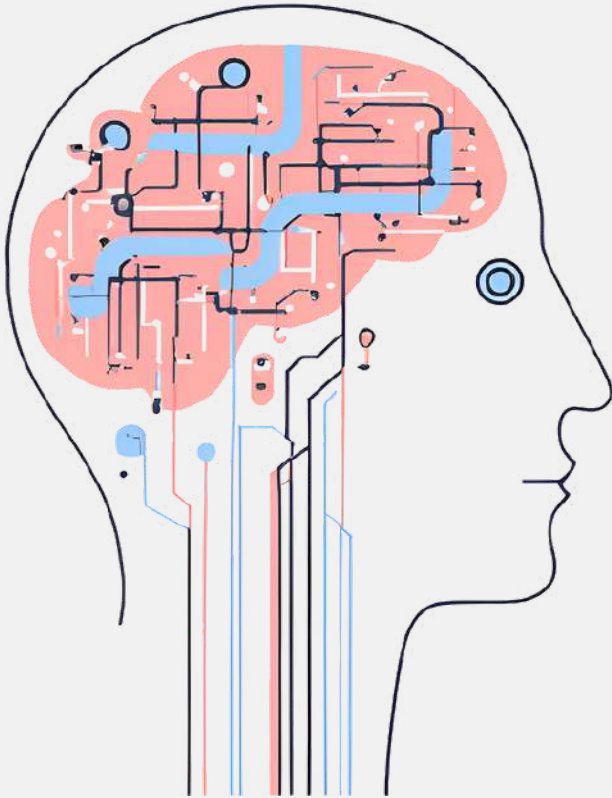
Fun on social media: Facebook and Instagram show you the coolest posts, thanks to AI knowing what you like.

Shopping made easy: Online stores use AI to suggest things you might love to buy.

Games that come alive: In video games, AI makes the characters and enemies act more like real life, making the games super fun!



**Try This: Think about your morning routine. Where do you think AI helps you?
Write or draw your ideas.**



**Netflix uses AI to recommend
movies based on what you've
watched before!**



Problem Solving with Artificial Intelligence

Artificial Intelligence (AI) enables computers to think like humans. In other words, computers can think and make decisions to solve problems just like a human would. Here are some ways AI can help:

Data Analysis

AI can quickly analyze vast amounts of information. For example, while playing a game, AI tracks the movements of enemies and responds in a way that challenges you.

Automatic Decisions

AI can automatically make decisions based on rules. For instance, it can examine a patient's condition and determine which treatment is needed.

Simulations

AI can replicate real-world situations in a computer environment. For example, it can simulate how traffic lights work or how a robot moves.



AI helps solve problems such as optimizing traffic routes using navigation apps to avoid delays.



Artificial Intelligence and Ethics (Rules for Proper Use)

Artificial intelligence (AI) is a technology that helps computers think like us. But just like humans, AI also has some rules to follow to do what is right and avoid what is wrong. We call these rules "ethics." Let's learn these rules in a simple way!



Being Fair

AI should treat everyone equally.

Example: A game AI should give everyone the same chance. It shouldn't help only boys or only girls.

Providing Explanations

AI should clearly explain what it does.

Example: If an AI decides who wins in a drawing competition, it should explain, "Why did I choose this person?"

Respecting Privacy

AI should not use people's private information without permission.

Example: If you write your name, age, or address, AI should not share it with others.

Ensuring Safety

AI should be careful to avoid harming people.

Example: A robot shouldn't be programmed to accidentally bump into people.

Respecting Human Decisions

AI should support human decisions instead of making decisions for them.

Example: A cooking app should offer options rather than saying, "You must do this."



Protecting the Environment

We should use AI in ways that don't harm the environment.

Example: Instead of using machines that consume a lot of energy, we should prefer eco-friendly ones.

Activity: Think of a rule you think all AI should follow to stay fair. Share it with your class and discuss.

Is it fair for AI to decide who gets a job?
Should AI replace humans in every task?



Privacy and AI

What is Privacy?

Privacy means the protection of personal information. This includes your name, age, where you live, phone number, and other details that should not be shared without your permission. Everyone should respect these pieces of information. Privacy protects your personal life, meaning that others should not interfere with it.

Why is Privacy Important?

Privacy is very important because it helps protect people's security and shows respect for their personal lives. If someone's personal information is shared without their consent, they can be harmed. For example, if someone learns your phone number and starts bothering you, it's a violation of privacy.

Privacy and the Internet

When using the internet and tech devices, many personal details are collected, making privacy even more important. For example, social media accounts, phones, and computers sometimes track where you are, which apps you use, or what websites you visit. Protecting privacy ensures that this information isn't shared without permission.



AI uses personal data for recommendations, raising privacy concerns; laws like GDPR protect users.

Ways to Protect Your Privacy

You can take simple steps to protect your privacy:

- Using Passwords: By putting strong passwords on your devices and accounts, you can keep your information safe.
- Being Careful When Sharing: It's important to know who can access the information you share online. Be cautious about sharing personal details.
- Setting Privacy Settings: By checking the privacy settings of your social media accounts, you can control who can access your information.

Privacy is an important concept that means everyone's personal information should be protected. When using the internet and technology, it is crucial to keep this information safe. By protecting privacy, we can safely and comfortably exist in the digital world.



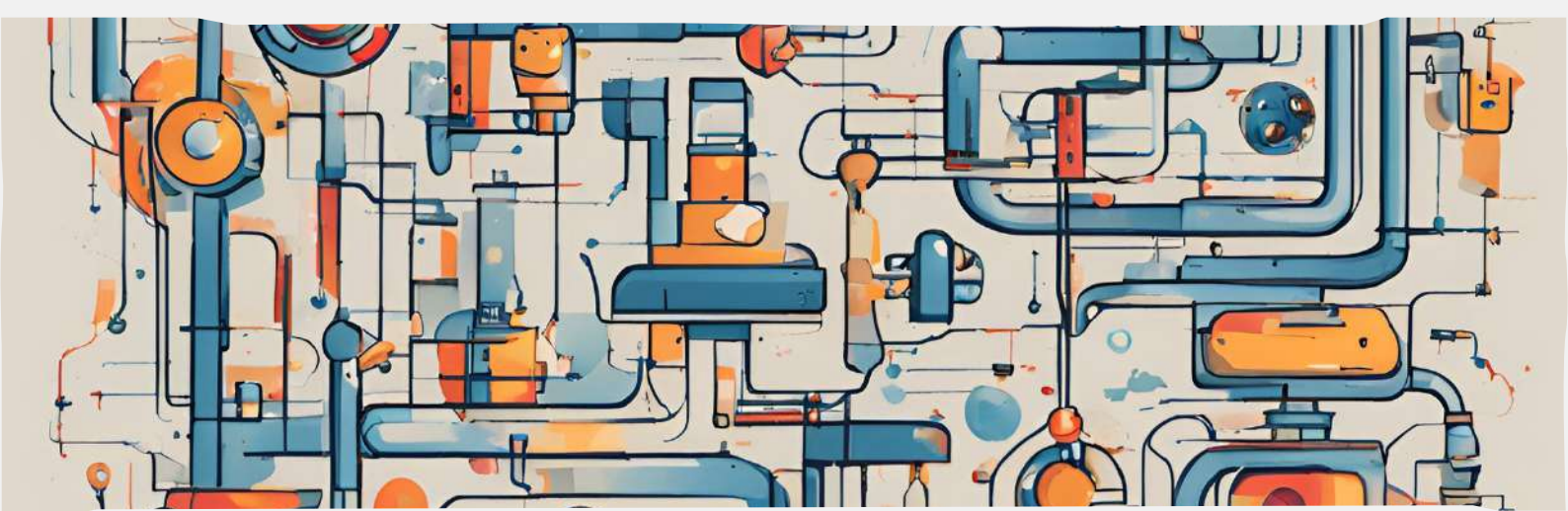
How It Works?

MACHINE LEARNING

Machine learning is the foundation of artificial intelligence. Computers learn by working with lots of data and drawing lessons from it.

How It Works: The computer analyzes data and creates rules. Then, it uses these rules to understand new situations.

Example: If we show a computer hundreds of pictures of dogs and cats, it can learn to identify whether a new picture is a "dog" or a "cat."



ALGORITHMS

Algorithms are step-by-step instructions that help computers solve problems.

How It Works: An algorithm takes data, processes it, and produces a result.

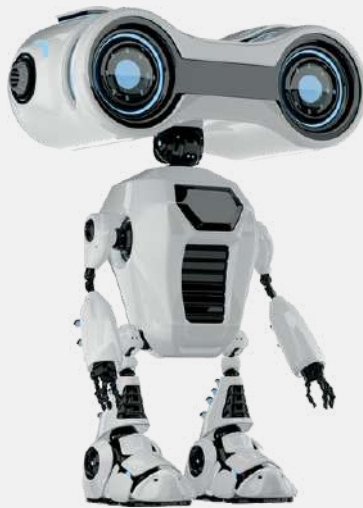
Example: An algorithm can sort 10 different fruits by their weight.

DATA

Data is the information that artificial intelligence needs to learn.

How It Works: Data is the input the computer uses to understand and learn. More data leads to a better learning process.

Example: If we want to teach AI how to make pizza, we need to give it data like the recipe and the list of ingredients.



DEEP LEARNING

Deep learning is a more advanced version of machine learning. It works using a structure called neural networks, which are similar to the human brain.

How It Works: Deep learning uses many layers of a neural network to learn more complex things.

Example: A computer can recognize not just one object in a photo but all the objects (e.g., a car, a tree, a person).

Learn Like a Computer!

What is Machine Learning?

Computers learn by analyzing lots of data and creating rules from it. Then, they use those rules to make predictions or solve problems.

Activity: Classify the Animals

Below are pictures of animals .

Look at the animals and answer the questions to help the computer (you!) classify them

Pictures and Names / Questions	Dog 🐕	Cat 🐈	Bird 🦜
Does it have four legs ?			
Can it fly ?			
Does it live in a house ?			



What is Artificial Intelligence in Games?

Artificial intelligence (AI) in games refers to the ability of in-game characters or objects to think and act independently. In other words, the computer-controlled elements of the game make decisions and interact with the game world as if they were real people.

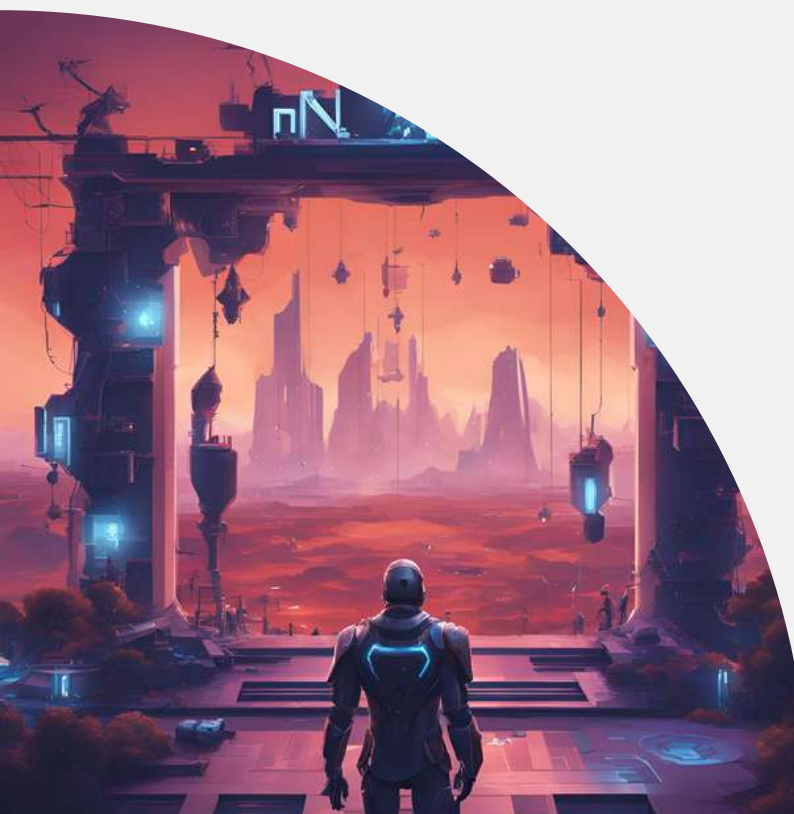
Why is Artificial Intelligence Used in Games?

Smarter Enemies: Thanks to AI, enemies in games can behave more intelligently, track players better, and develop different strategies. This makes games more challenging and exciting.

More Realistic Characters: AI allows game characters to act more naturally, express emotions, and interact with the game world in a more realistic way.

Dynamic Game Worlds: AI enables game worlds to constantly change and evolve. For example, the game world can adapt and transform based on the choices players make.

More Enjoyable Games: AI makes games more engaging and immersive, encouraging players to play for longer periods.



How Does Artificial Intelligence Work in Games?

Rules and Algorithms: Game designers create rules and algorithms that dictate how AI characters should behave.

Decision-Making: AI characters constantly make decisions based on these rules and the data from the game world.

Learning: Some AI systems can observe and learn from player behavior, improving over time.

Examples of Artificial Intelligence in Games:

Game Characters: NPCs (non-player characters) in games can move, talk, and complete tasks independently using AI.

Enemies: AI-powered enemies can follow players, set traps, and develop different attack strategies.

Game World: AI can make the game world dynamic. For instance, weather can change, traffic can increase, or new events can occur.



AI in games improves enemy behavior and world interactions, making gameplay more immersive, challenging, and unpredictable for players.

How Does Artificial Intelligence Draw Pictures?

Let's learn together how a computer can draw pictures!

Did you know that there's a magical computer program called artificial intelligence? This program, just like a superhero, can create new pictures all by itself by looking at a huge amount of images.

So, how does this work?

Imagine that artificial intelligence is like an artist's apprentice. It carefully studies many pictures of a master artist and learns how that artist draws, what colors they use, and their style. Just like a student learning from their teacher to develop their own style, artificial intelligence gets inspired by the pictures it sees and creates its own artworks.

Different Artists, Different Styles

Artificial intelligence doesn't just draw in one style. The more it looks at an artist's works, the better it can imitate that artist's style. For example, if artificial intelligence studies Van Gogh's famous works, it can create pictures filled with thick brushstrokes and vibrant colors. Or if it studies Picasso's works, it can draw pictures in a cubist style, combining objects in different shapes.



Why Does Artificial Intelligence Draw Pictures?

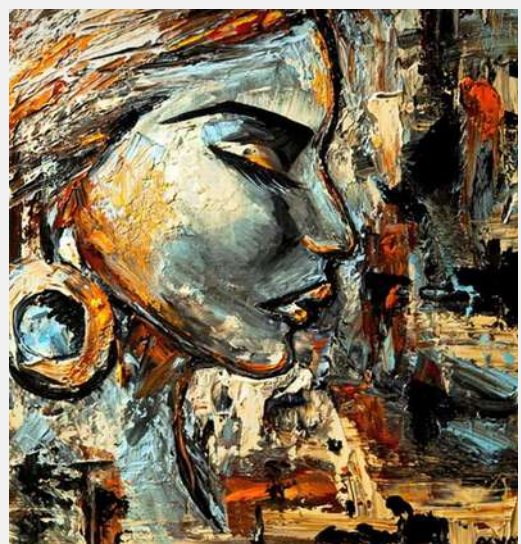
Thanks to artificial intelligence, art is now more accessible to everyone. You don't have to be an artist to create your dream picture. Artificial intelligence has brought a whole new breath of fresh air to the art world, and it keeps pushing the boundaries of art.

Remember: Artificial intelligence isn't magic, it's just a very advanced computer program. But thanks to this program, some very interesting and creative things are happening in the art world.

Now it's your turn! Use your imagination to draw your own picture and try to recreate it in different styles with an artificial intelligence program. Who knows, maybe you could become an amazing artist too!

Try to Guess!

Now, I'll show you pictures by different artists. Can you guess which ones were made by artificial intelligence and which ones were made by real artists?



Music Composition

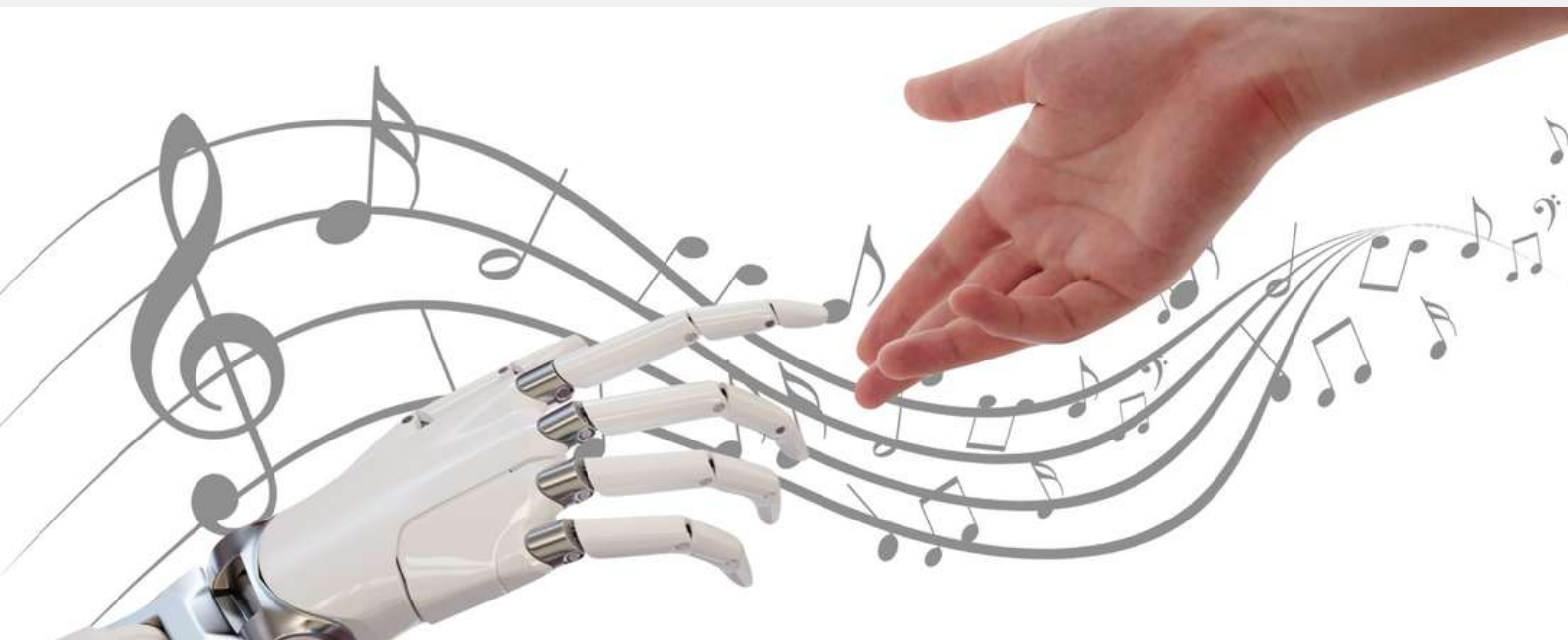
Your Music Buddy: AI is like a musical friend who's always ready to help. You can hum a tune or play a rhythm, and the AI can add fun beats, instruments, or extra notes to make your song better.

Teamwork in Action: You start with an idea, and the AI suggests cool things to add, like a drumbeat or a happy melody. It's like having a friend who always has great ideas for your song.

You're in Charge: The AI gives you suggestions, but you decide what stays and what goes. If you like what it adds, great! If not, you can try something else.

Learning Together: As you play and create, the AI learns what you like and gets better at helping you make music that sounds just how you want it.

Making Awesome Songs: You and the AI can create fun, unique songs full of cool surprises—things you might not have thought of on your own!



Collaborative Creativity

Smart Helper: Imagine having a super-smart robot friend that gives you ideas when you're drawing, writing, or making music. It doesn't do all the work—it just helps you think of fun or different things to try.

Making Art Together: You might draw a picture, and the computer can add cool patterns or colors. It's like a teamwork art project between you and the computer!

Story Buddy: If you're writing a story, the computer can suggest what happens next. You can decide if you like the idea or want to come up with your own.

Music Partner: You can hum a tune, and the computer can turn it into a full song by adding instruments and beats. It's like being in a band with your computer!

Your Choice Matters: The best part is that you're still the boss. You pick the ideas you like and add your own creativity to make it special!

AI-powered tools help with drawing, writing, and music, offering ideas while leaving creativity to you.



AI in the Future

How will artificial intelligence (AI) change our lives in the future? Let's explore this exciting topic together!

AI Everywhere

In the future, AI will be part of every aspect of life—at home, in school, and in many other places. It will make our lives easier and more enjoyable.

Self-Driving Cars

Cars will drive themselves using AI, making transportation safer and reducing traffic accidents. These cars will take you wherever you want to go without needing a driver.



AI in Education

AI will help teachers understand each student's needs, providing personalized lessons. Students can review topics as much as needed to fully master them.

AI and Robots

AI will make robots smarter. They will assist with household tasks, shopping, and even work in dangerous areas, helping with repetitive or risky jobs.

AI and Games

Games will become more exciting with AI! Game characters will be smarter, and games will change based on your actions, offering a more dynamic experience.



MAYBE IN THE FUTURE THERE WILL BE
ROBOTS AND WE WILL PLAY GAMES ON
THE ROAD!

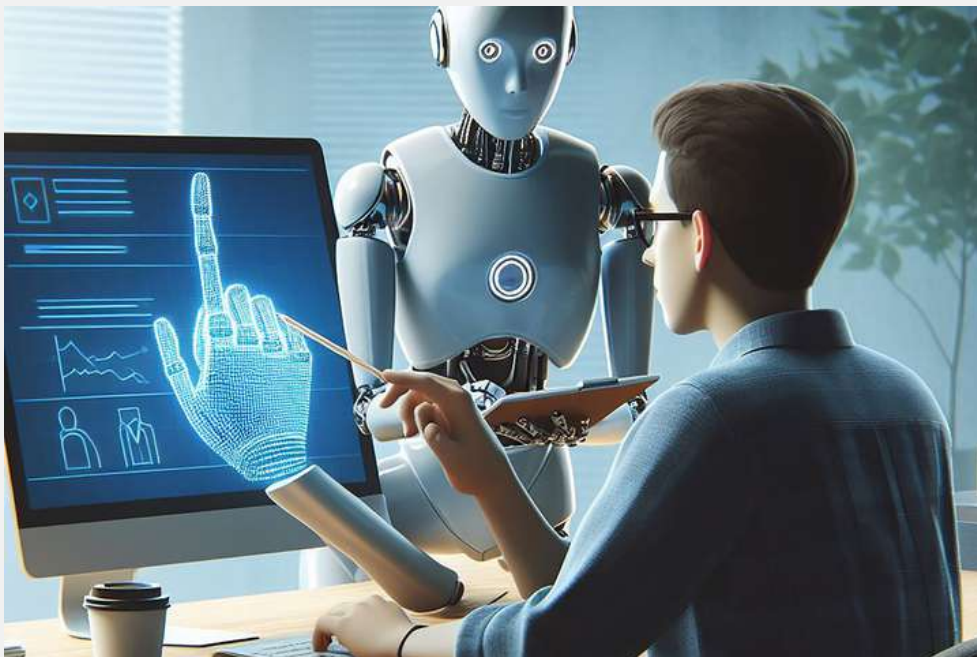


Now it's your turn! Think about how AI will change your life in the future and answer the following questions:

In which field would you like to use AI in the future?

How can AI make your daily life easier?

If you were designing a robot, what features would you want it to have?



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