

Artificial Intelligence + Machine Learning





"Machines must be able to create original ideas that they were not programmed to create if they are to be considered intelligent."

- Ada Lovelace



“Artificial Intelligence is the simulation of human intelligence in machines, enabling them to perform tasks and make decisions that would typically require human cognition.”

- Who?

Artificial Intelligence

|

what is the definition of artificial intelligence?



Artificial Intelligence (AI) is the simulation of human intelligence in machines, enabling them to perform tasks and make decisions that would typically require human cognition.

|

thank you

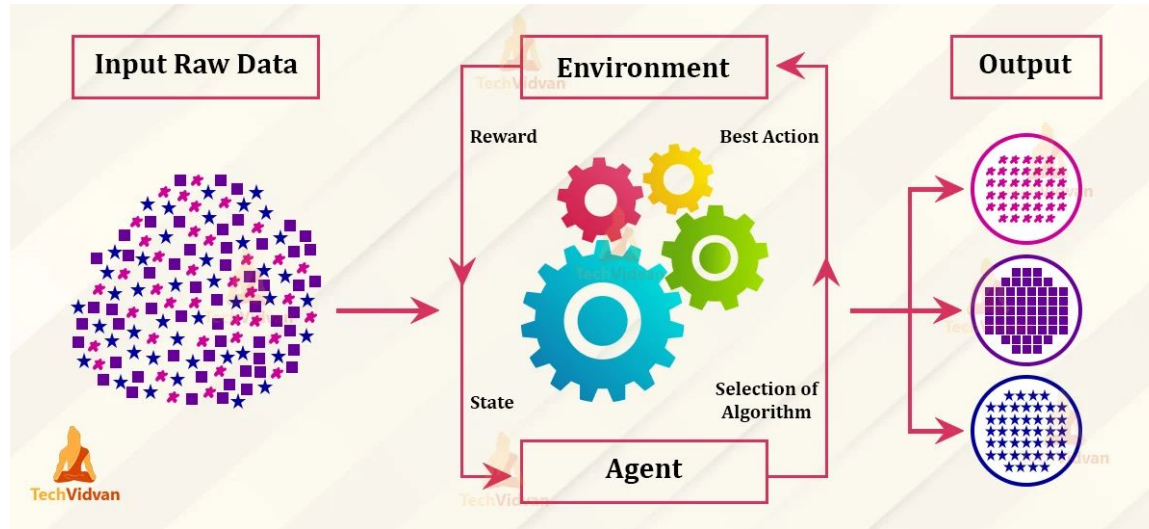


You're welcome! If you have any more questions or need further assistance, feel free to ask.
Have a great day!

ChatGPT!

Machine Learning

Machine Learning focuses on developing *algorithms* and statistical *models* that enable computers to learn from and make predictions or decisions based on data.



Goal: To recognize patterns in data to make predictions.

Features:

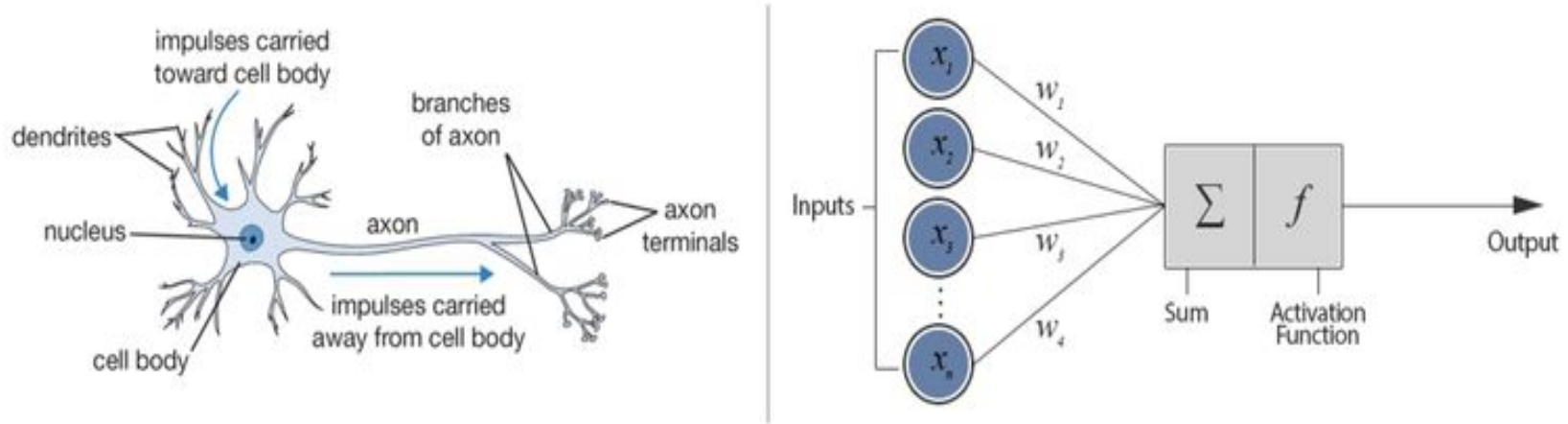
- Models can be trained to recognize patterns in almost any kind of data.
- Models can learn to improve through training and feedback.
- Models can generate new signals such as music, images, text, and more!



Computers can create music and play music. However, you can't know where the creativity is coming from, the programmer or the computer.

Neural Networks

Biological Neuron versus Artificial Neural Network



Neural networks attempt to computationally mimic what a human brain would do!

Such as vision processing, long term memory, or even... dancing!

Neural Networks in Action



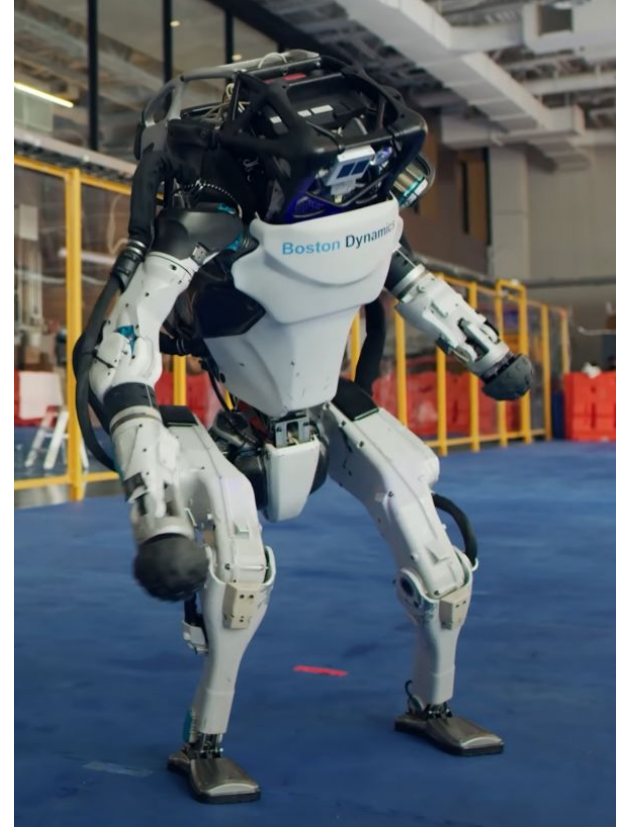
A robot is a device that can automatically perform tasks

Robotics with AI and machine learning can create new exciting jobs.

Like programming robots to dance!

Boston dynamics robot AI for self balancing and movement correction

- Teaching it to dance allowed them to understand and find new problems in moving a robot



Ethics: moral principles governing behavior.

Discussion:

Can you think of good things to use artificial intelligence for?

Can you think of bad things to use artificial intelligence for?

Lets ask chatGPT about ethics and AI

Ethical Uses of AI:

1. **Medical Diagnosis and Treatment:** AI can assist doctors in diagnosing diseases, interpreting medical images, and suggesting personalized treatment plans, leading to improved patient outcomes and more efficient healthcare.
2. **Environmental Conservation:** AI-powered systems can help monitor and protect the environment by analyzing data from sensors, satellites, and drones to detect deforestation, track wildlife, and manage natural resources.



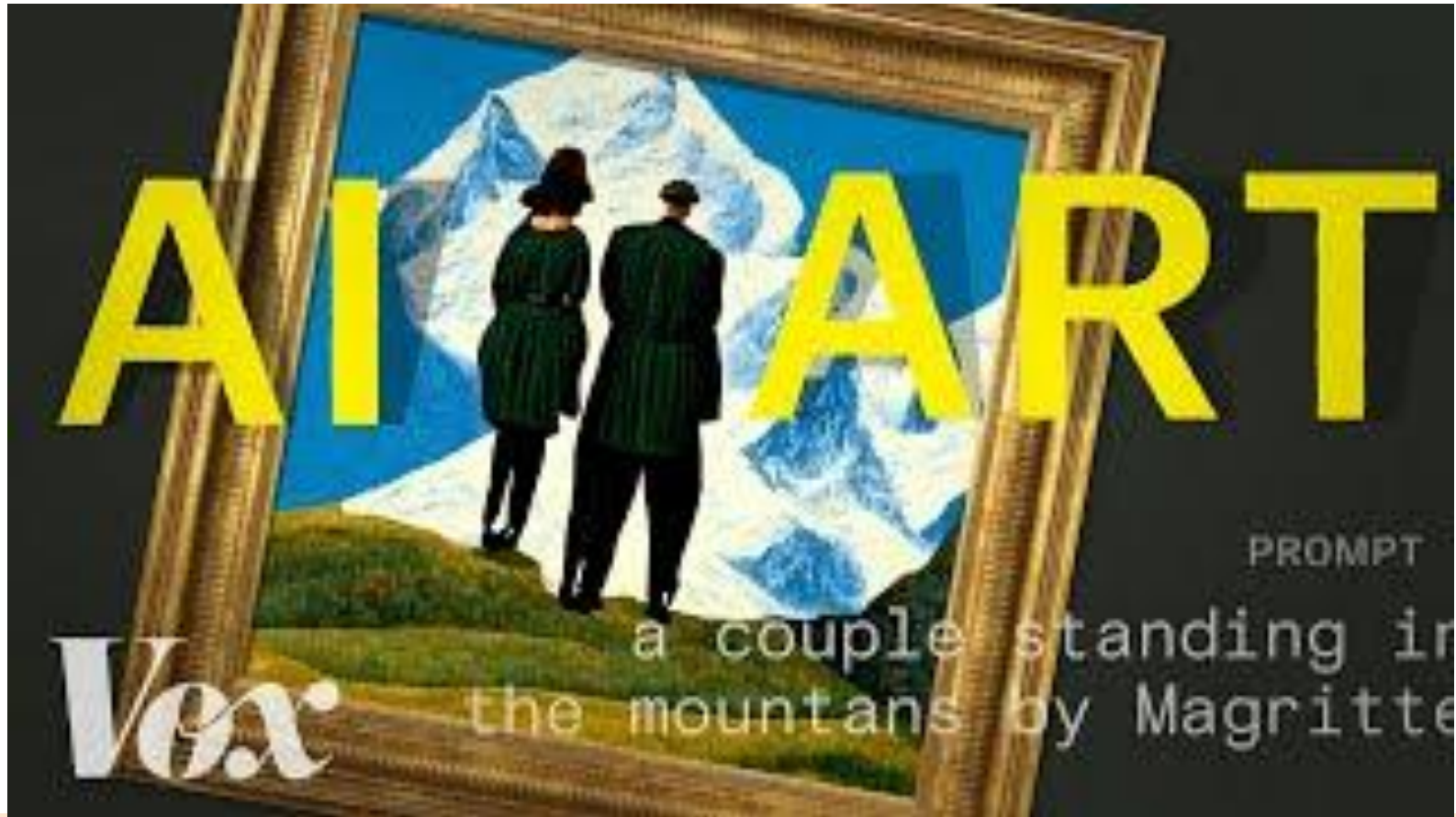
Unethical Uses of AI:

1. **Surveillance and Privacy Violations:** AI-powered surveillance systems, if misused, can invade people's privacy, leading to mass surveillance and misuse of sensitive data.
2. **Biased Decision-Making:** AI algorithms can inherit biases present in training data, leading to discriminatory decisions in areas like hiring, lending, or criminal justice, reinforcing existing inequalities.
3. **Deepfake and Misinformation:** AI-generated deepfake videos and fake news can be used to deceive and manipulate people, leading to misinformation and harmful consequences.
4. **Autonomous Weapons:** The development of AI-powered autonomous weapons without proper ethical oversight could lead to indiscriminate and unethical use of lethal force.

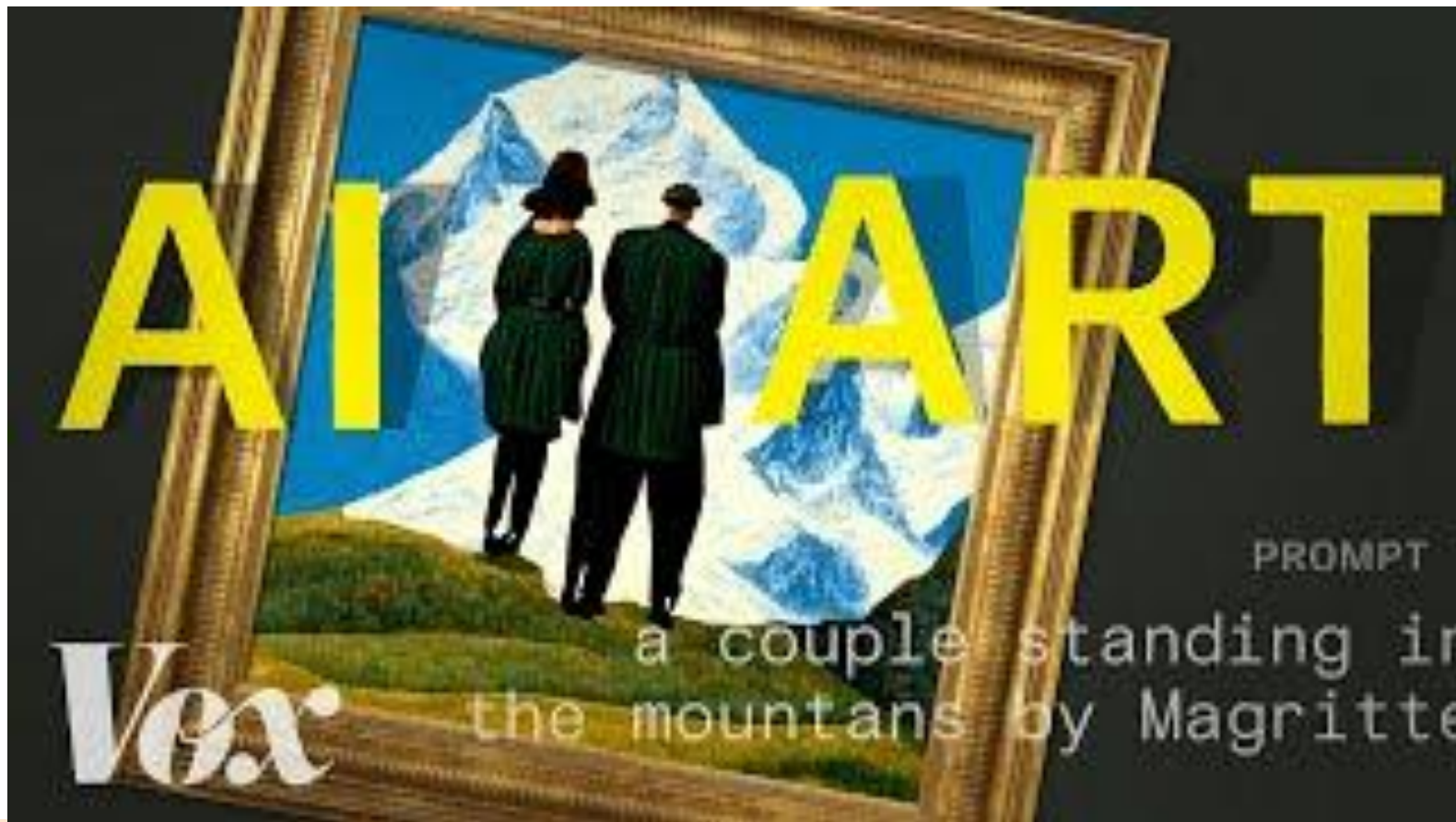
AI Generated Content



Where did AI Image Generation come from?

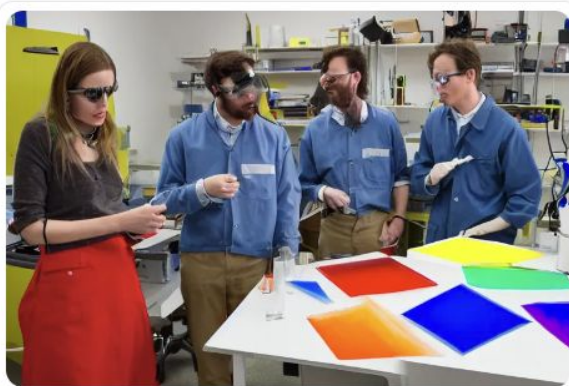


Can anyone explain how AI art was first created?



Can anyone explain what a prompt is?

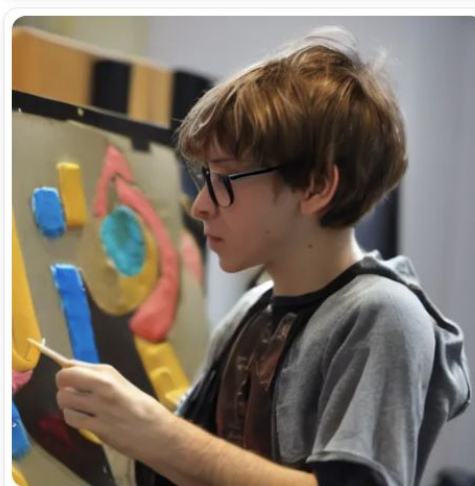
AI Prompting!



recent photograph of
reckless!!! whimsical!
scientists in a lab inventing a
new primary color!!!!,
presentation, slide show



an old plane recently crashed
on a hill, there is a forest in the
background, texture, intricate,
details, highly detailed,
masterpiece, architecture,
building, trending on
artstation, focus, sharp focus,
concept art, digital painting,
fantasy, sunny, day, midday



a young artist exasperated
that his recent talk about AI
open source models is already
out of date

AI Prompting!

“An old plane”

- *Crashed*
- *On a hill*

“Forest in the background”

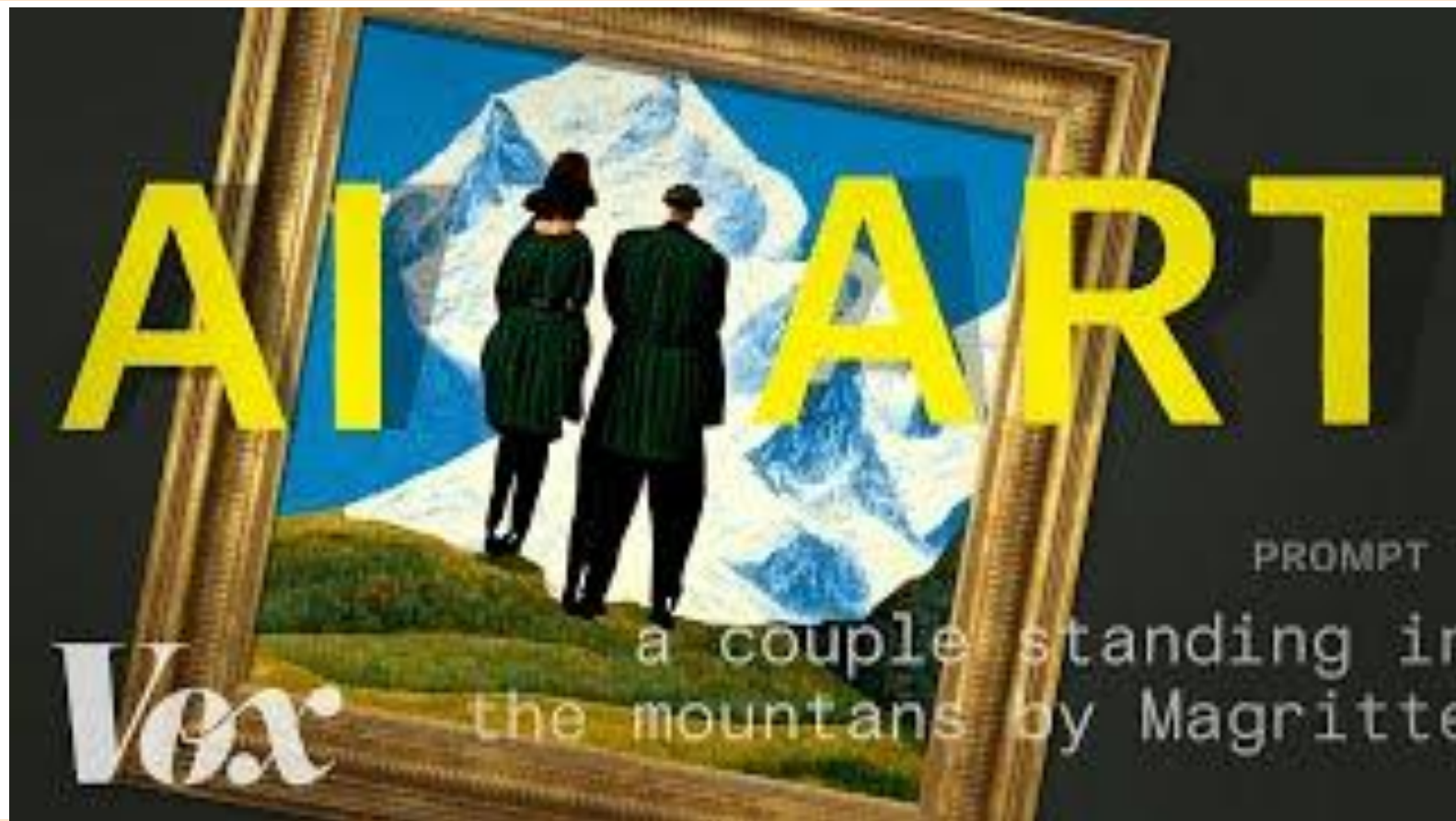
- *Texture*
- *Highly detailed*
- *Intricate*

Styling / physical image

- *Sharp focus*
- *Digital painting*
- *Sunny*
- *Midday*



an old plane recently crashed on a hill, there is a forest in the background, texture, intricate, details, highly detailed, masterpiece, architecture, building, trending on artstation, focus, sharp focus, concept art, digital painting, fantasy, sunny, day, midday



Lets make some AI powered activities!

<https://chatgpt.com/>



Let's Create Art Together!

duventurac@gmail.com

Make an image that shows one specific moment during the camp, try to make it as detailed as possible, so your classmates can easily identify it. Place, people, location, activity, details.

Can someone help fill in our prompt?

Generate an image ...

Subject: _____ Action: _____

Background (location): _____

Characteristic: _____ Details: _____

<https://chatgpt.com/>



Recreate your favorite cartoon, movie, tv show.



Prompt (improved):

*Generate an image that illustrates your favorite cartoon, movie, or TV show — **without mentioning its name.***

Image Description:

Subject: A small blue car parked inside or near a cozy living room.

A boy with round glasses, a yellow shirt, and black shorts is sitting

on the floor watching TV. Action: The boy is focused on the television, holding a remote in one hand and a snack in the other.

Background (Location): A traditional Japanese-style living room with sliding shoji doors, tatami mats, and soft, warm lighting.

Recreate your favorite cartoon, movie, tv show.



Recreate your favorite place in the world.

Prompt (improved):

Generate an image that illustrates your favorite place in the world

— *without mentioning its name.*

Prompt (improved):

Generate an image that illustrates your favorite food in the world

— *without mentioning its name.*

Prompt (improved):

Generate an image that illustrates a person in the room describing as many characteristics as possible.

— *without mentioning its name.*

AI + Your Dream BCI Technology!

Lets use [Stable Diffusion](#) to create our dream BCI technology!

I created a new foot that is controlled by signals from the brain!



AI + Your Dream BCI Technology!

Guidelines:

- Outline the problem your BCI will solve.
- Explore and write down what technology will be used:
 - EEG, prosthetic limbs, artificial intelligence?
- Explain who can use this technology and who will benefit most?