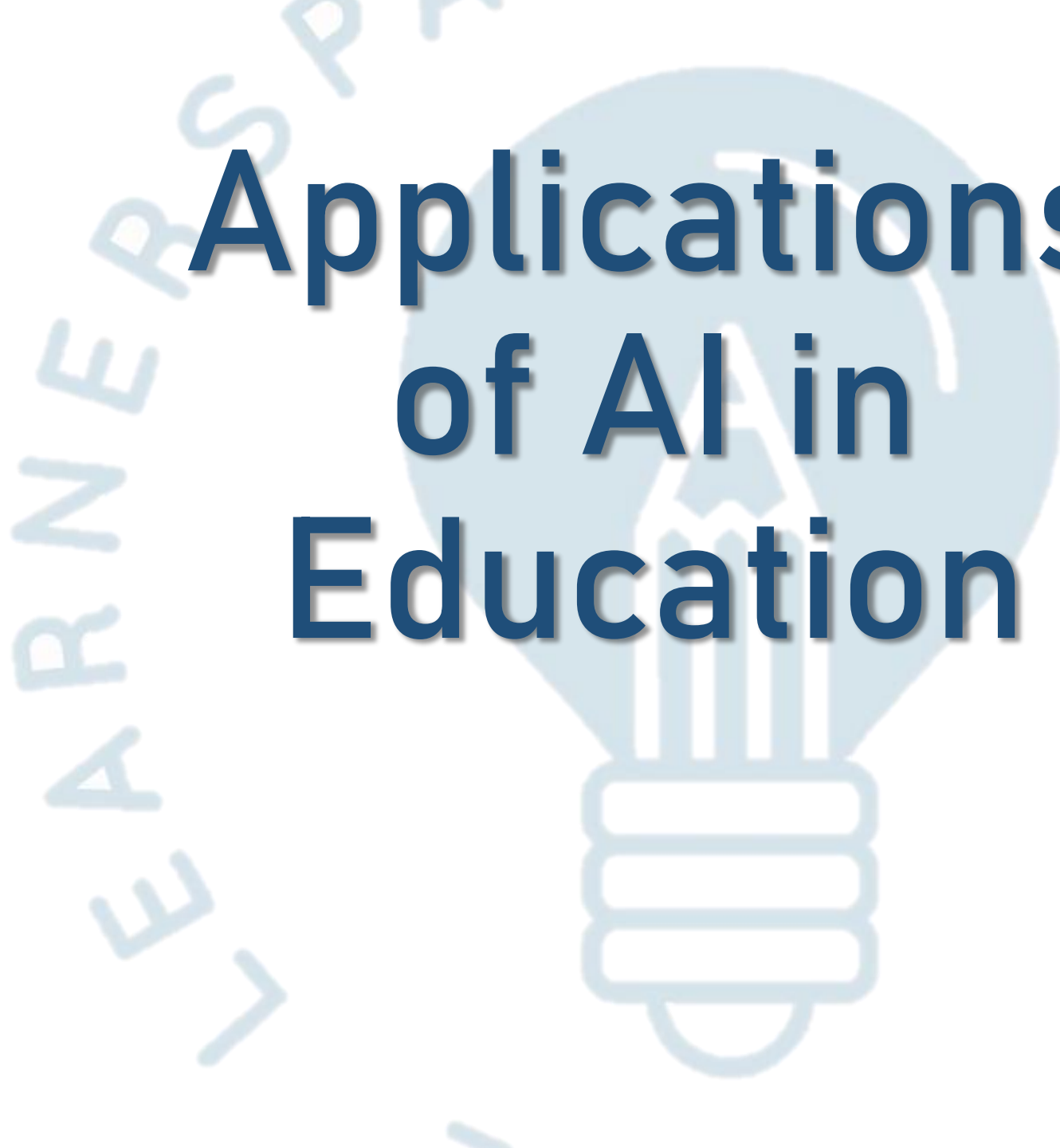


Applications of AI in Education



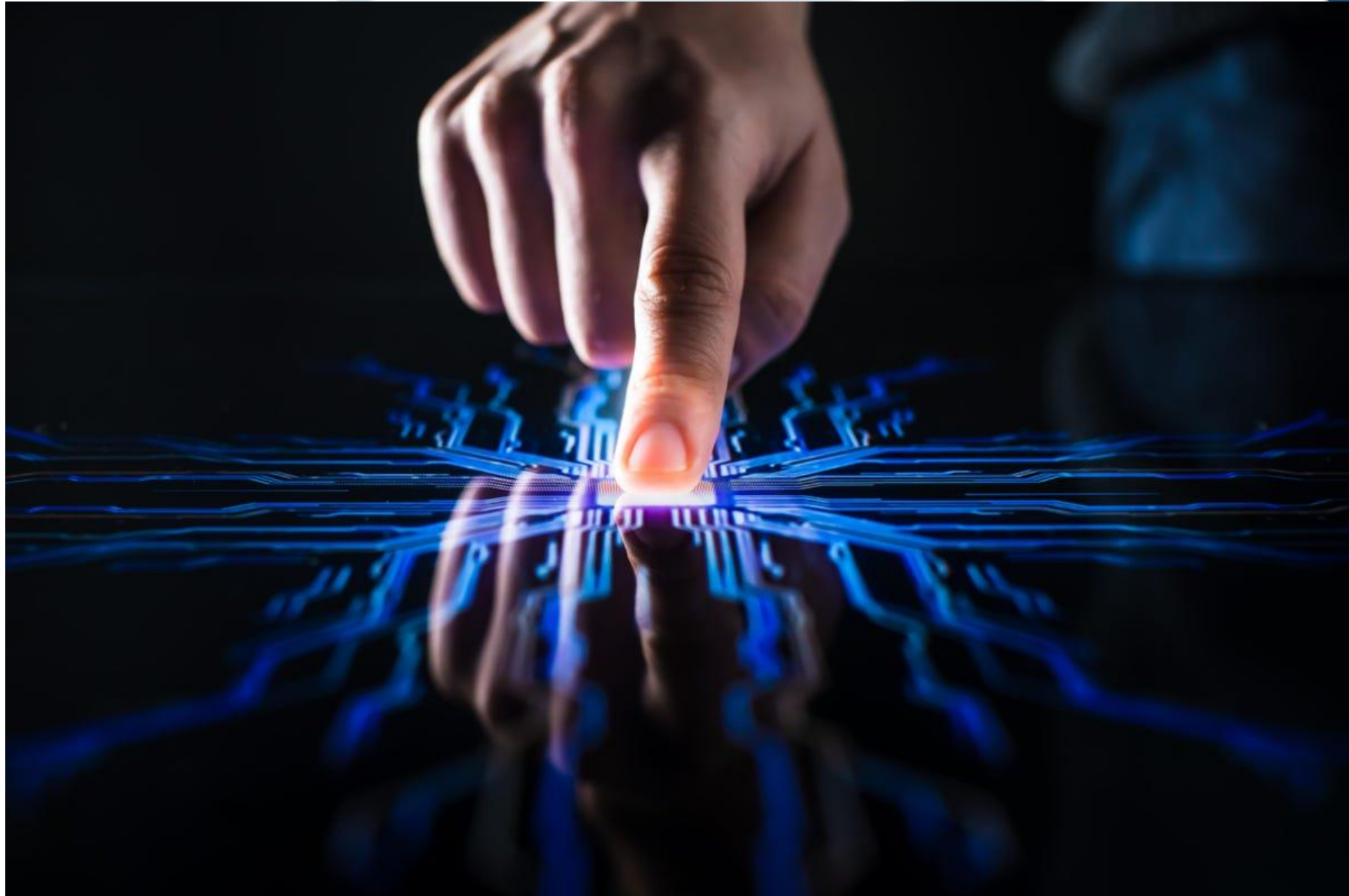
LEARNERSPACE

ChatGPT & AI in Education

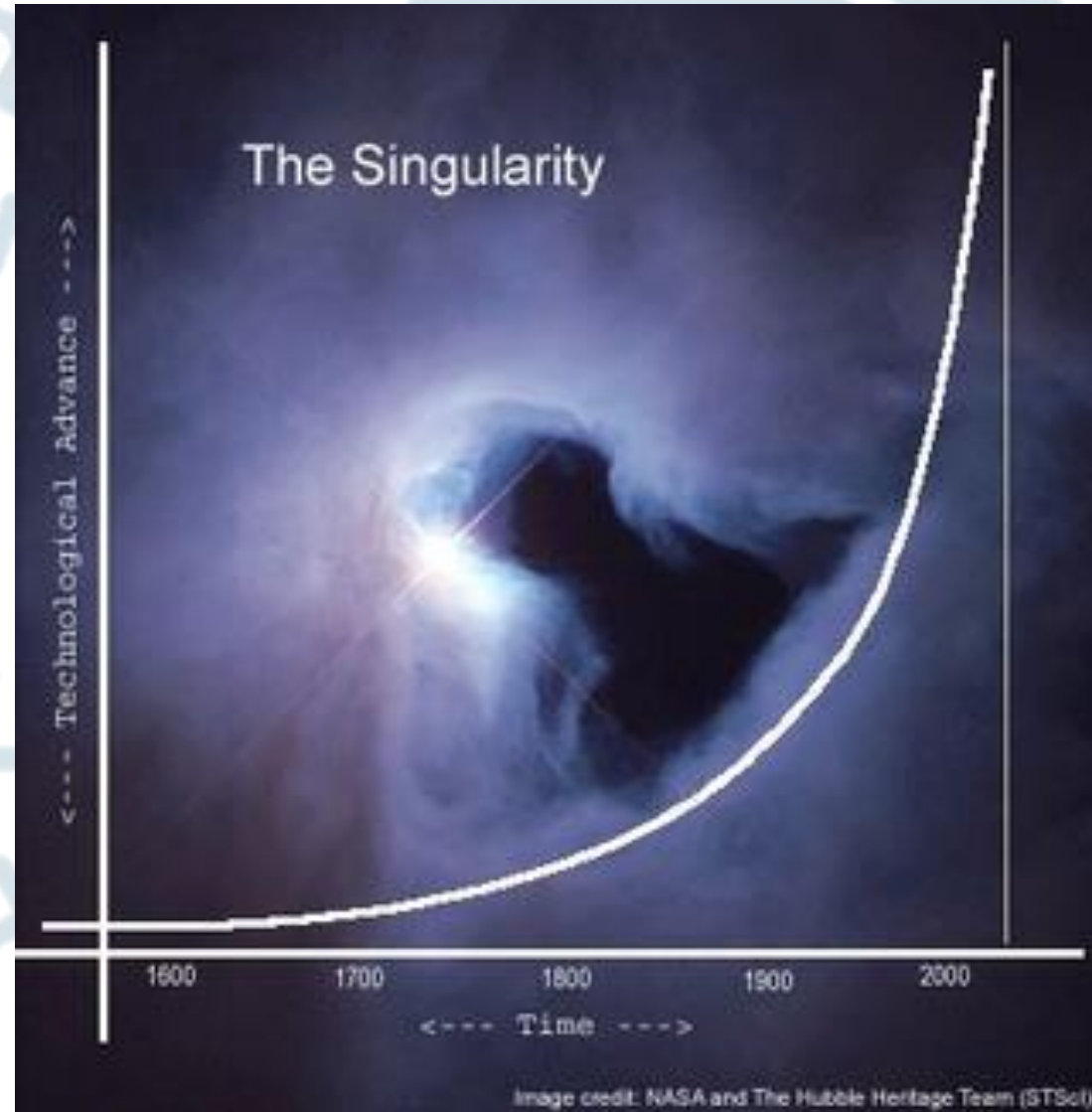
Our roadmap for the day.

- **Overview – applications, implications.**
- **General Purpose Applications.**
- **Applications for Reading and Writing.**
- **Subject-specific applications.**
- **Professional use.**
- **Ethical and social implications.**

Chat GPT – a Game Changer



The Singularity



Augmented Reality



Augmented Reality



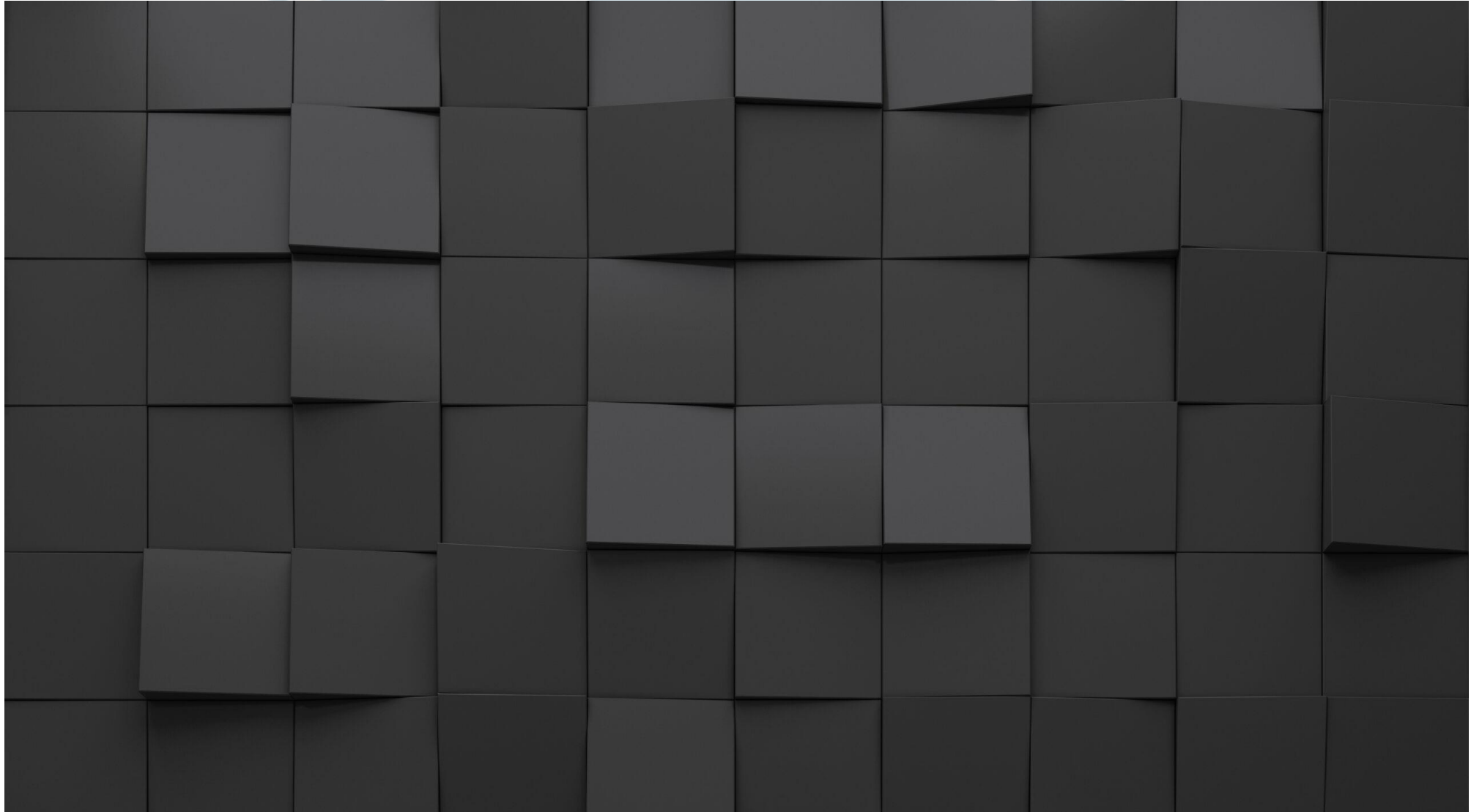
Virtual Reality



Big Data



The Black Box Effect

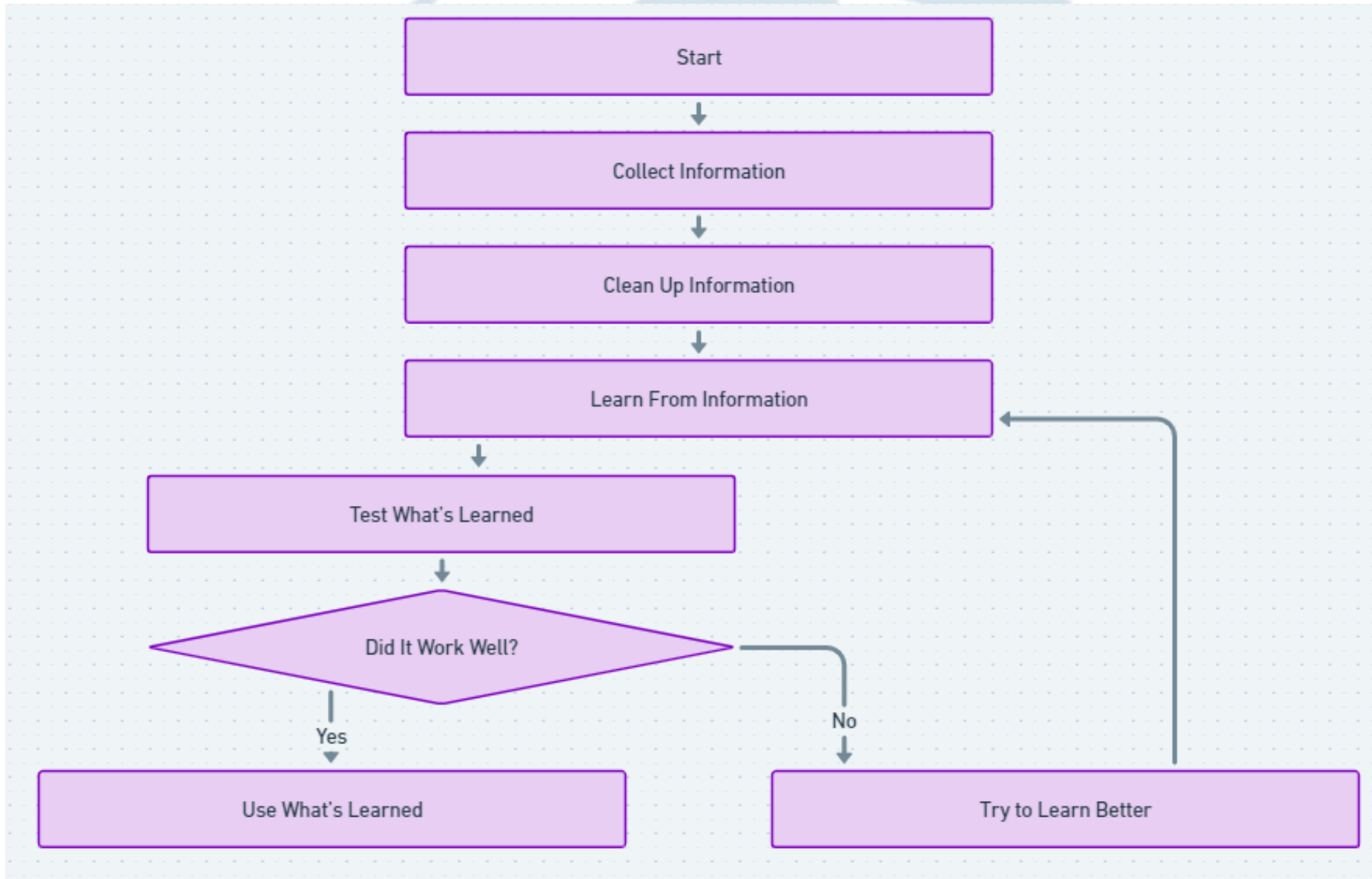


The Black Box Effect

Machine Learning

- A branch of artificial intelligence with focus on predictive algorithms.
- Techniques: Supervised learning, unsupervised learning, and reinforcement learning.
- Applications: Spam filtering, recommendation systems, and self-driving cars.

Machine Learning



Google Teachable Machine

[About](#)

[FAQ](#)

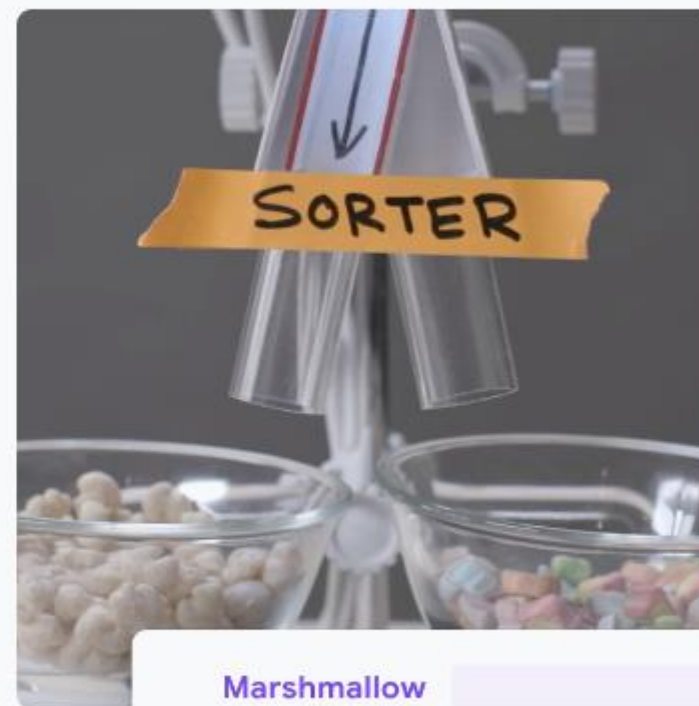
[Get Started](#)

Teachable Machine

Train a computer to recognize your own images, sounds, & poses.

A fast, easy way to create machine learning models for your sites, apps, and more – no expertise or coding required.

Get Started



Marshmallow

Not Marshmallow

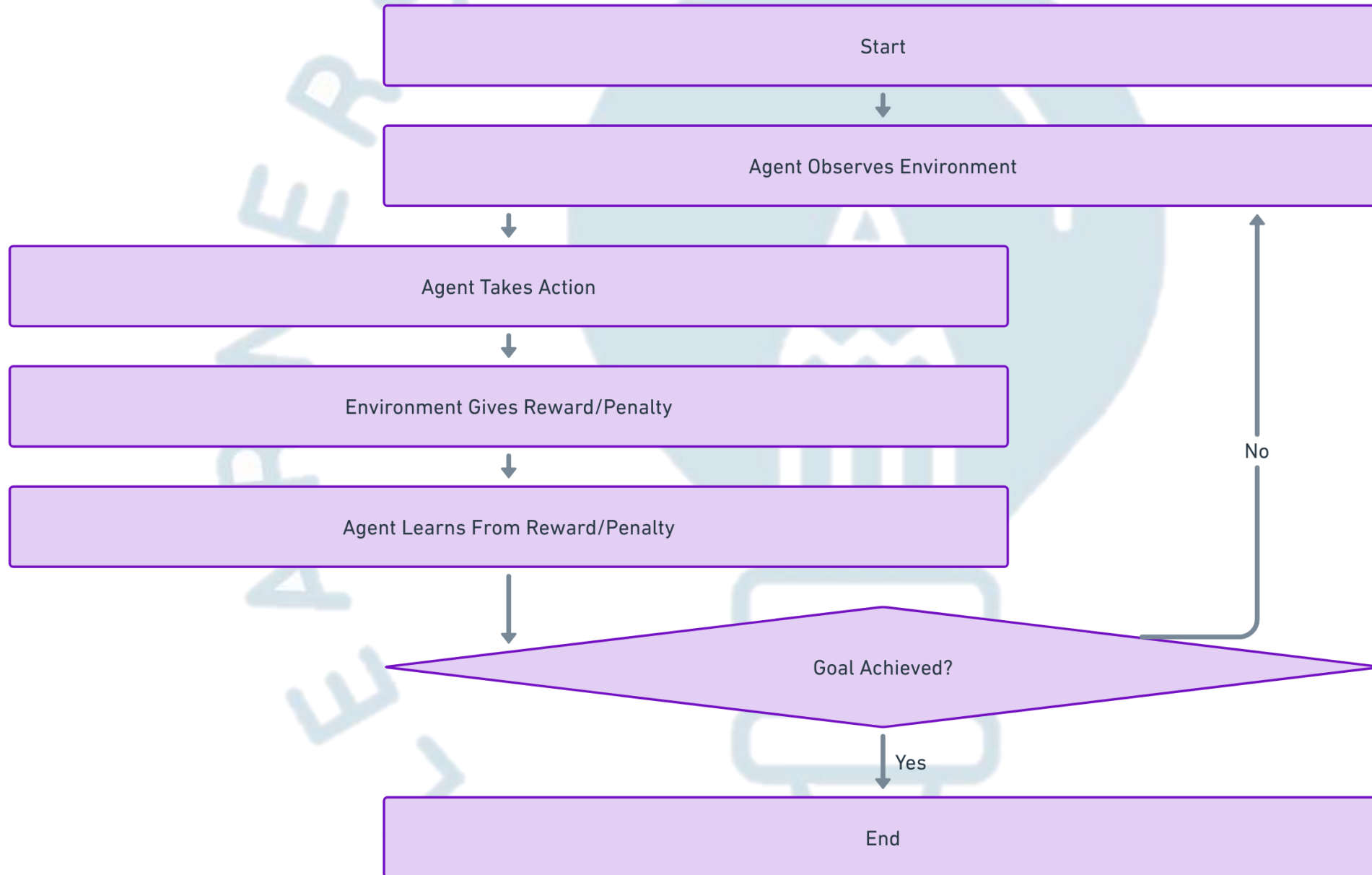
100%

AI in Education

Reinforcement Learning

- Learning through interaction with an environment, receiving rewards or penalties.
- Maximize cumulative rewards over time, learning optimal policy for decision-making.
- Applications: Robotics, game playing, and resource allocation.

Reinforcement Learning

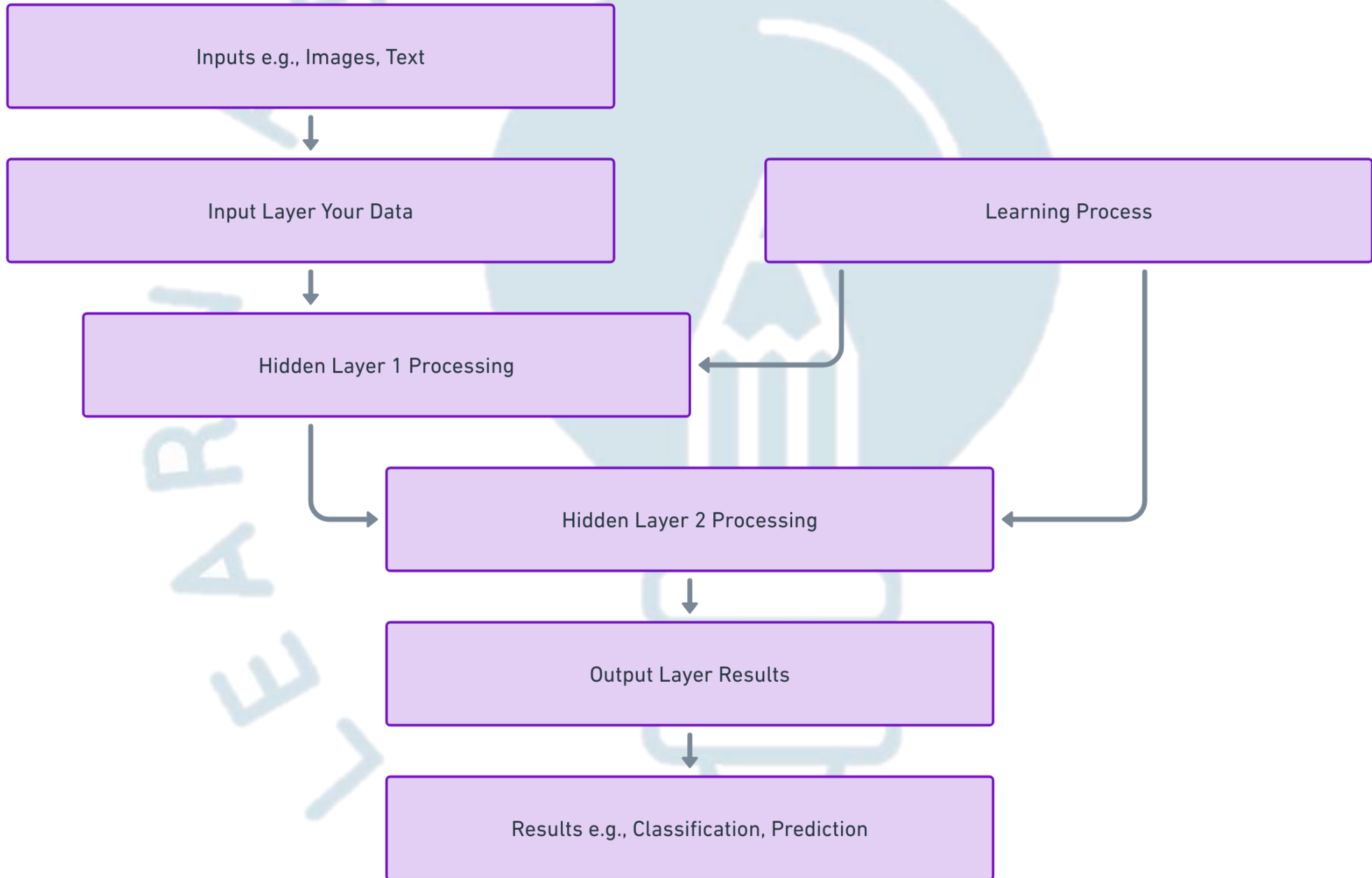


AI in Education

Neural Networks

- **Interconnected layers of artificial neurons designed for data processing and learning.**
- **Mechanism: Adjusts connection weights through training for pattern recognition and decision-making.**
- **Role: Fundamental component of modern AI applications.**

Neural Networks

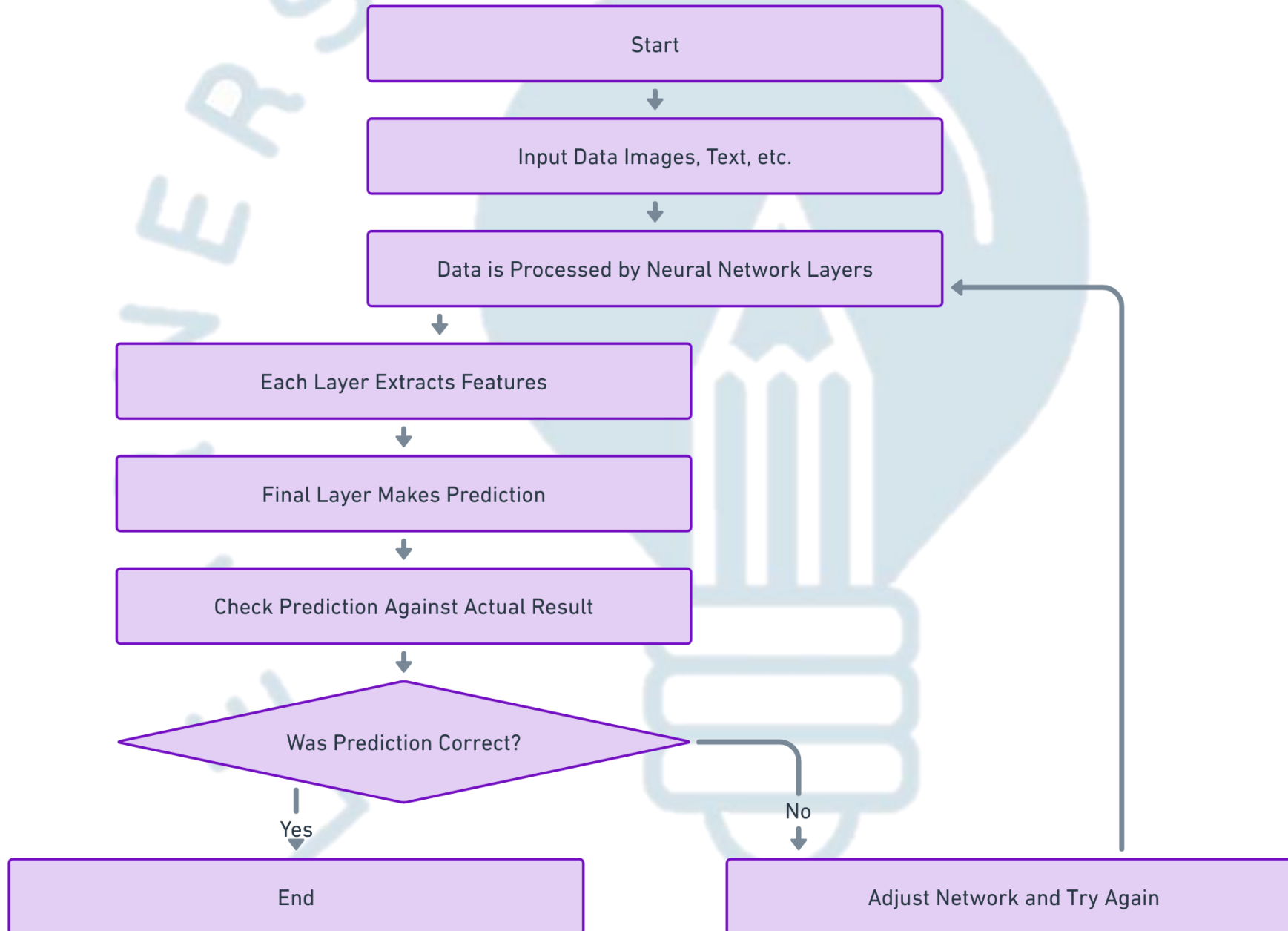


AI in Education

Deep Learning

- A subset of machine learning focusing on complex patterns in data.
- Tools: Utilizes multi-layered artificial neural networks.
- Specializations: Excels in tasks like image recognition, natural language processing, and speech recognition.

Deep Learning



AI in Education

Natural Language Processing (NLP)

- A subfield of AI enabling computers to comprehend and generate human language.
- Techniques: Text analysis, sentiment detection, and machine translation.
- Applications: Chatbots, voice assistants, and automated content generation.

AI in Education

Some basic terms and definitions

- Chat GPT is a Generative Pre-Trained Transformer.
- Created by OpenAI.
- Language Model based on Deep Learning.
- 175 billion learning parameters.

AI in Education

Chat GPT

- Deep Learning Neural Network.
- Reinforcement learning, based on human feedback, was used for training.
- Most advanced Natural Language Processing model ever.
- Worst version we will experience.

AI in Education

Biases and human reinforcement

- Early models presented biases from data corpora.
- Gender biases.
- Racial and ethnic biases.
- De-biasing.

OpenAI



OpenAI

Research Product Developers Safety Company

Search

Log in

Sign up

```
Message(role: .bot, text: "Of course, happy to help! Did you know that the sun's energy comes from nuclear fusion?"),
Message(role: .user, text: "Yes, nuclear fusion is the process of combining light atomic nuclei into heavier ones. In"),
Message(role: .bot, text: "Yes, nuclear fusion is the process of combining light atomic nuclei into heavier ones. In"),
Message(role: .user, text: "That's incredible. Is there any way we can harness nuclear fusion here on Earth?"),
Message(role: .bot, text: "Scientists are working on it! Nuclear fusion has the potential to be a nearly limitless so"),
Message(role: .user, text: "That's fascinating. What are some other cool scientific discoveries that have been made r"),
Message(role: .bot, text: "Well, just a few years ago, scientists detected gravitational waves for the first time. Th"),
Message(role: .user, text: "Wow, that sounds incredible. How did they detect the waves?"),
Message(role: .bot, text: "They used incredibly sensitive instruments called interferometers to detect tiny changes i"),
Message(role: .user, text: "That's amazing. Science truly is a remarkable field. What do you think are some of the bi"),
Message(role: .bot, text: "There are so many! Some of the biggest challenges include understanding the mysteries of d"),
Message(role: .user, text: "Those are definitely some huge challenges. But it's encouraging to know that there are se"),
Message(role: .bot, text: "Absolutely! Science is all about exploring the unknown and making new discoveries that can"),
Message(role: .user, text: "Thanks for all the amazing information! I'm excited to keep learning more about science."),
Message(role: .bot, text: "Let me know if you have any more questions or if there's a specific topic"),
Message(role: .user, text: "I'm curious about the double-slit experiment. Why is it considered spooky"),
Message(role: .bot, text: "It's a great question! The double-slit experiment is a classic experiment in quantum mechanics. It shows that particles like electrons can behave like waves. When you fire electrons through two slits, they create an interference pattern, which is characteristic of waves. This is considered 'spooky' because it suggests that particles can exist in multiple states at once until they are observed. It's a mind-blowing concept that challenges our classical understanding of physics. Would you like to know more about it?"),
```

Creating safe AGI that benefits all of humanity

[Learn about OpenAI](#)

|| Pause video

AI in Education

Risks of neural networks

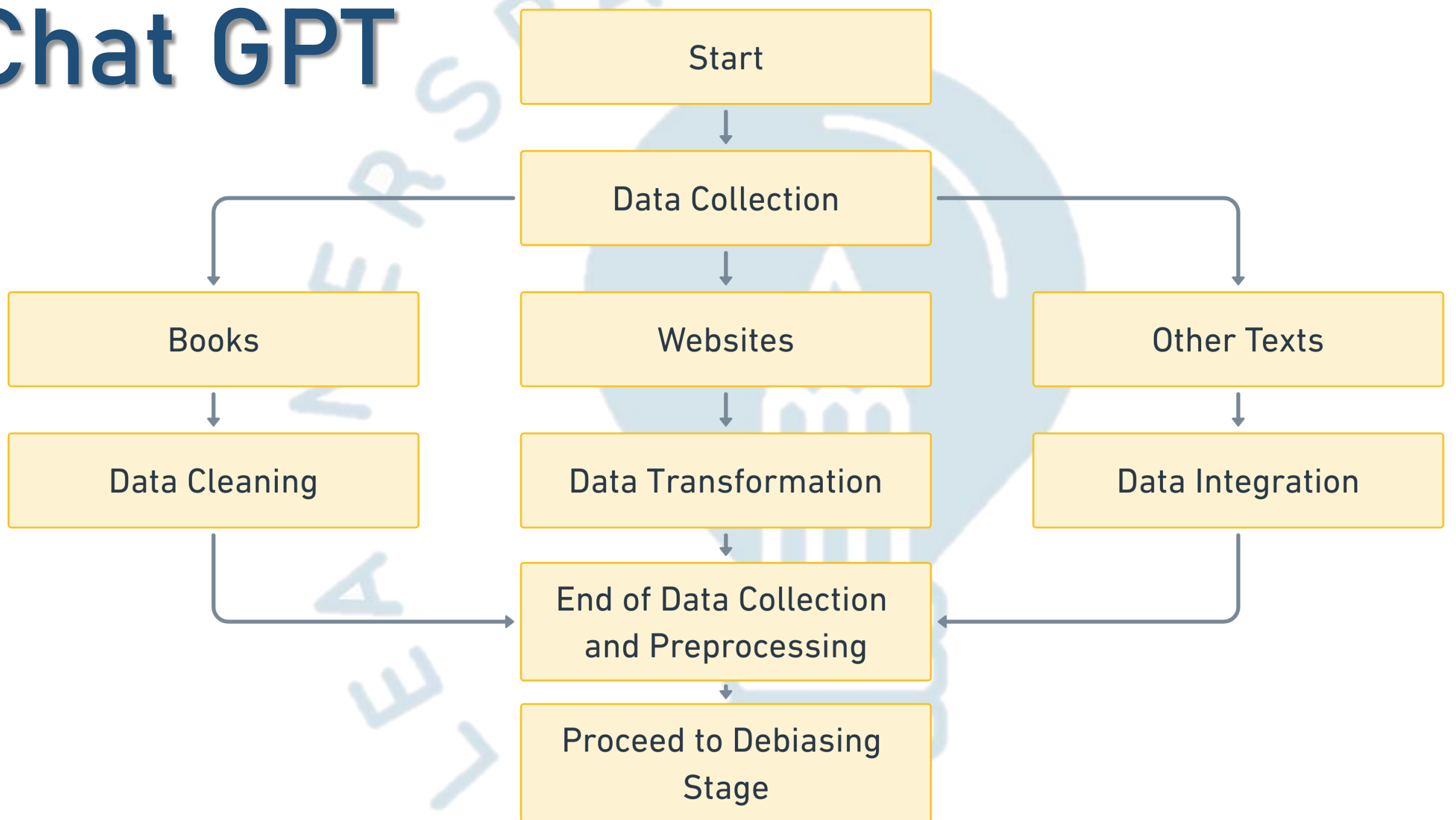
- Pneumonia research – rules model vs. neural networks.
- Opaqueness of model vs. accuracy.
- Transparency initiatives.
- Do people have the right to explanations when algorithmic decisions are made?

Chat GPT

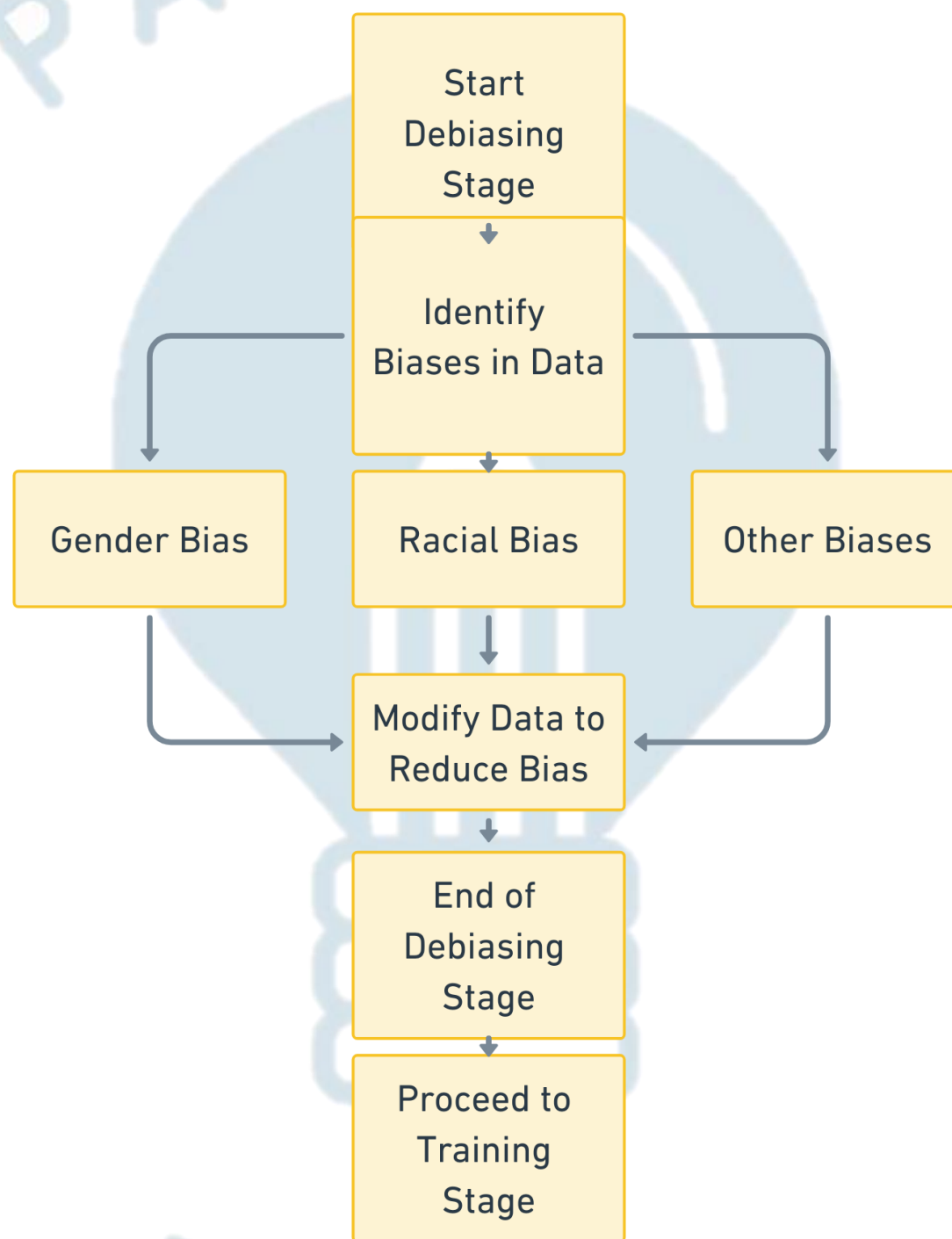
Limitations and implications

- Pre-trained, not real time or organic.
- No information post 2021.
- Closed knowledge base.
- Very expensive model.
- Human input for training.
- Never 100% error free.

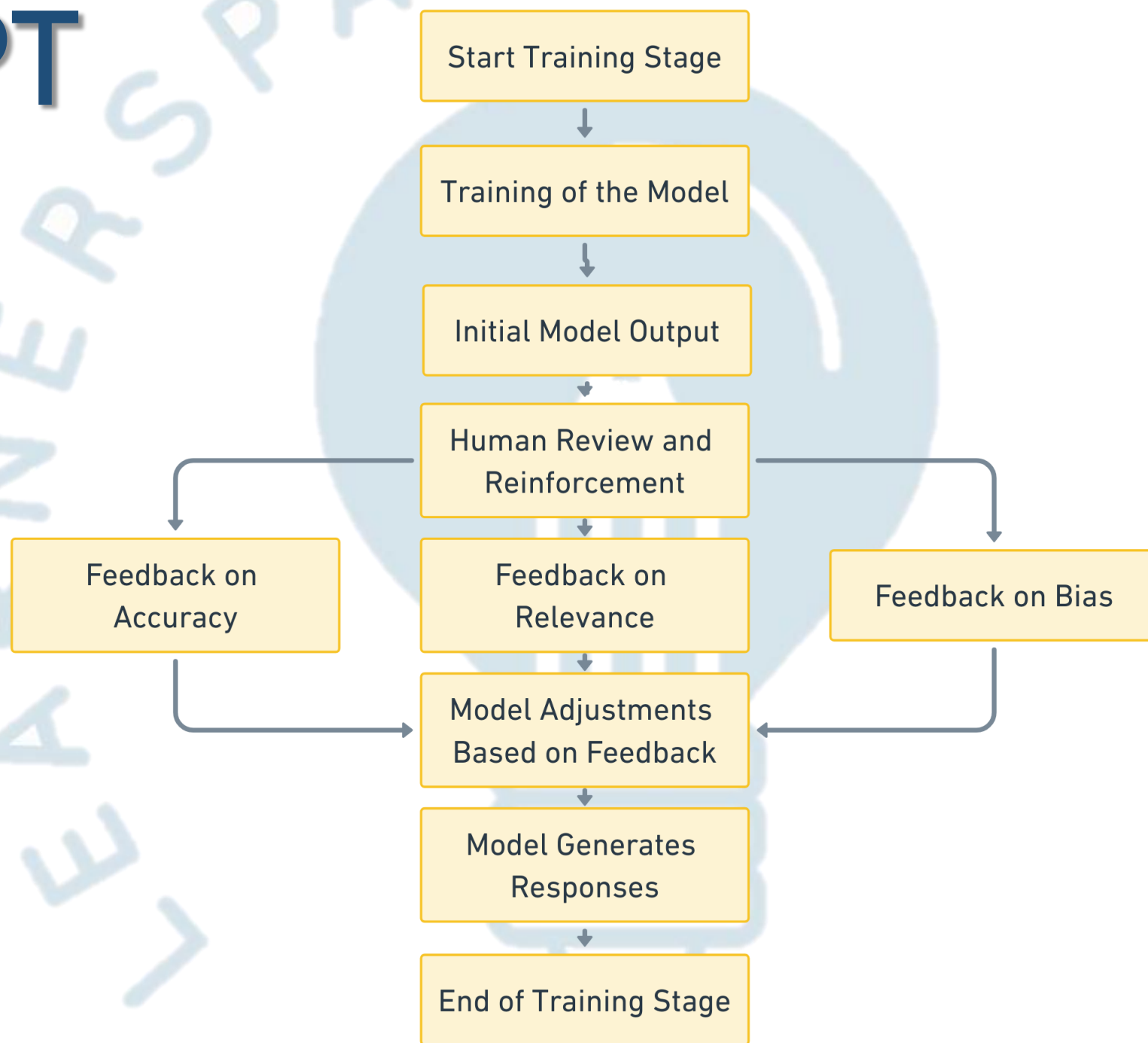
Chat GPT



Chat GPT



Chat GPT



AI in Education

Chat GPT is only the beginning...

- Technology Applications that will revolutionize life and learning.
- The Black Box Effect.
- **Applications to Learning.**
- Ethical and social implications.

AI Image Generators

starryai. [Home](#) [Blog](#) [Help](#) [Careers](#)

 Create

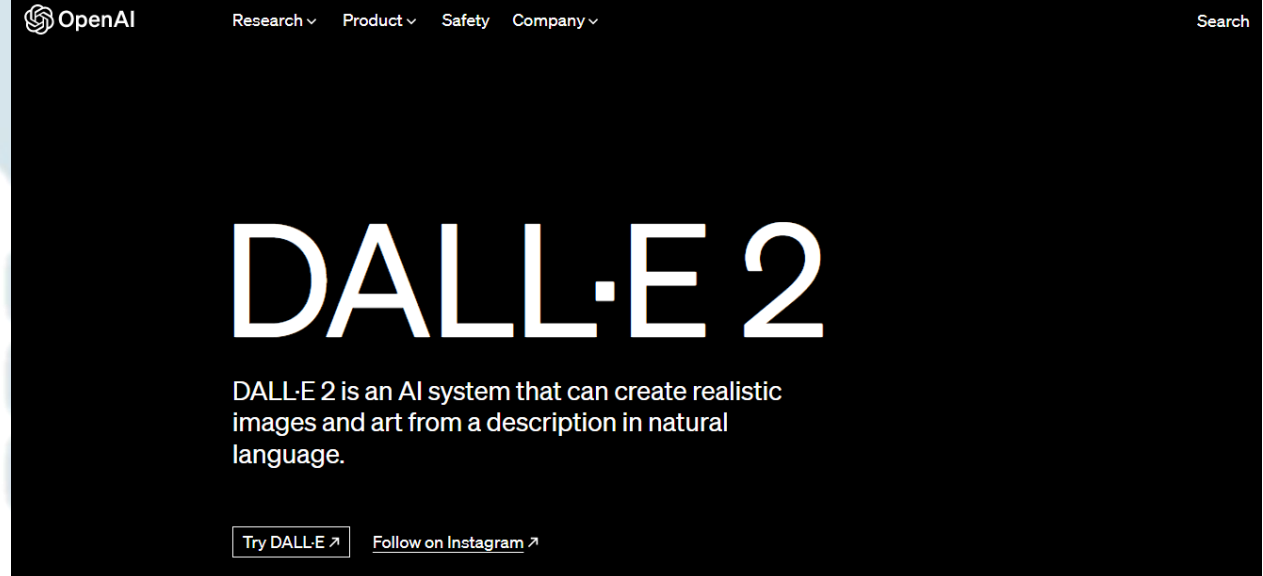
Create Art with AI

Generate art 🎨 simply by describing what you want to see and our Artificial Intelligence transforms your words into art.

 Start Creating

Download on the
App Store

Get it on
Google Play



The image shows a screenshot of the OpenAI DALL-E 2 landing page. The page has a dark background with white text. At the top left is the OpenAI logo, and to its right are navigation links for Research, Product, Safety, and Company. A search bar is located at the top right. The main heading "DALL-E 2" is prominently displayed in large white letters. Below the heading, a paragraph describes DALL-E 2 as an AI system that creates realistic images and art from natural language descriptions. At the bottom, there are two buttons: "Try DALL-E" and "Follow on Instagram".

OpenAI [Research](#) [Product](#) [Safety](#) [Company](#) [Search](#)

DALL-E 2

DALL-E 2 is an AI system that can create realistic images and art from a description in natural language.

[Try DALL-E ↗](#) [Follow on Instagram ↗](#)

AI Writing Assistant



Write Faster With AI, Save Time ⚡

Compose AI is a Chrome extension that cuts your writing time by 40% with AI-powered auto-completion & text generation.



Backed by Combinator

Watch Guide

Download Extension



Hey team,

Just wanted to provide a quick update on the numbers from last quarter. It seems that there were a few points that are worth discussing, and I think it'd

Without Compose



Hey team,

Just wanted to provide a quick update on the numbers from last quarter. It seems

Michelle from Compose

Hey there 🤖 Welcome to Compose 🏠

Take a look around! If you have any...



AI YouTube Transcript

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YouTube Summary with ChatGPT

Get summary of the YouTube videos.

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AI Meeting Notes



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Effortless meeting notes and action items

Cogram takes automatic notes in virtual meetings and identifies action items, while keeping your data private and secure.

[Try for free](#)

[Try Cogram in a 15-min live](#)

Transcript:

Jane Wilde:

Hey all, great to meet everyone. So where are we on this?

Oscar Maine:

Hi Jane. We'll prepare and share an overview deck with your team this week. Please have your colleagues take a look at it.

Jane Wilde:

Thanks Oscar. Do you have a timeline for setting up an integration with our ERP? That would be very helpful.

Meeting Writeup:

Summary:

Jane Wilde and Oscar Maine discuss the setup of a software tool for procurement optimisation. They align on the steps required for approval. Jane Wilde asks about an ERP integration.

Action Items:

- Share an overview deck with Jane Wilde. Assignee: Oscar Maine
- Review with her colleagues. Assignee: Jane Wilde
- Check what the timeline for an ERP integration would be. Assignee: Oscar Maine

AI Slides Creator

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SlidesAI now supports es Spanish & it Italian 🇪🇸
The support for jp Japanese and fr French is coming soon! :)

Create Presentation Slides with AI in seconds

Say goodbye to tedious, manual slides creation. Let the AI write the outline and presentation content for you.

With our tool, you can easily create **professional, engaging slides from any text in no time.**

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AI Slides Creator

My First Presentation SLIDE 6 OF 6 TABLE SHARE

SLIDE COLOR

BACKGROUND

SWITCH THEME...
EDIT THEME...

SWOT Analysis for Creating an Innovative New K12 School

Strengths	Weaknesses	Opportunities	Threats
Innovative curriculum	Lack of resources	Access to technology	Competition from other schools
Experienced staff	Limited budget	Engaged community	Changes in regulations
Strong leadership	Lack of experience	Diverse student population	Declining enrollment

*Adapted from 'SWOT Analysis for Schools' by MindTools.com

Plugins

Model
Plugins ALPHA

Plugins
No plugins enabled

Plugin store



OpenTable

Install ↻

Allows you to search for restaurants available for booking dining experiences



FiscalNote

Install ↻

FiscalNote enables access to select market-leading, real-time data sets for legal, political, and regulatory...



Instacart

Install ↻

Order from your favorite local grocery stores.



Zapier

Install ↻

Use Zapier to interact with over 5,000+ apps like Google Sheets, Trello, Gmail, HubSpot, Salesforce,...



KAYAK

Install ↻

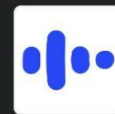
Search flights, stays & rental cars or get recommendations where you can go on your budget.



Milo Family AI

Install ↻

Curating the wisdom of village to give parents ideas that turn any 20 minutes from meh to magic.



Speak

Install ↻

Learn how to say anything in another language with Speak, your AI-powered language tutor.



Wolfram

Install ↻

Access computation, math, curated knowledge & real-time data through Wolfram|Alpha and Wolfram...

Data Analysis

Code Interpreter

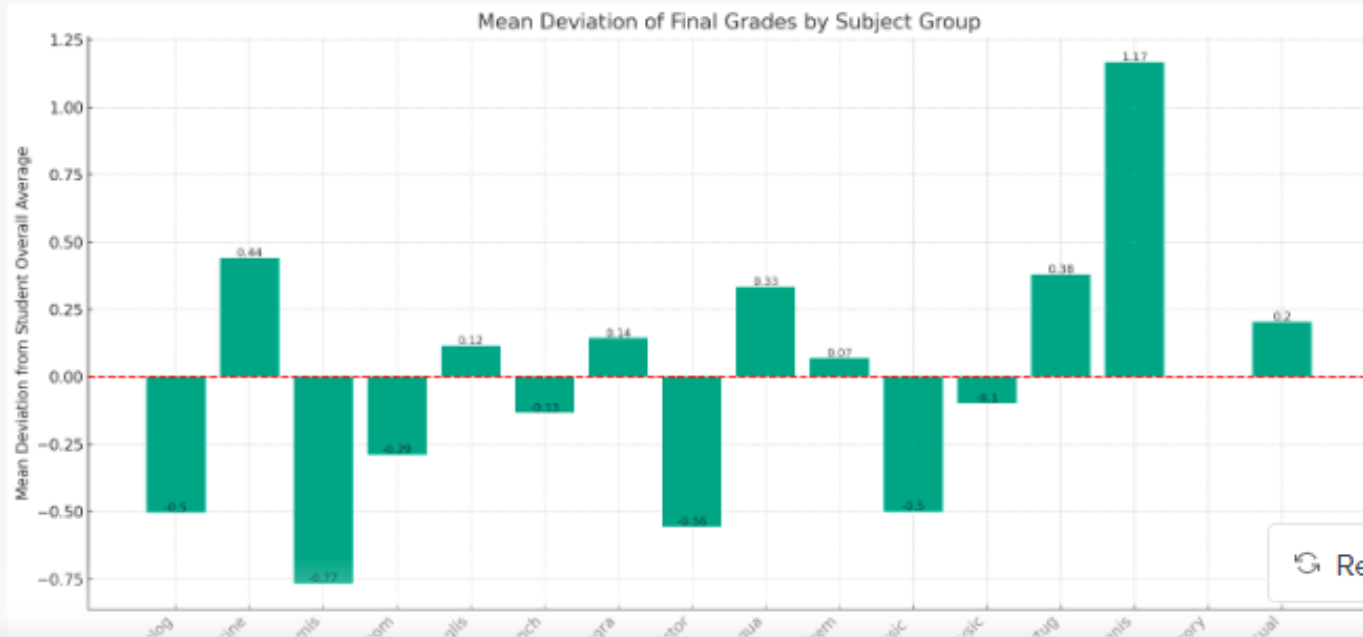
3. Group the deviations by subject to calculate the mean deviation for each subject.

4. Analyze and visualize the mean deviations to understand the relative performance in each subject.

Let's start by performing these steps:

Finished working

Show work ▼



Regenerate

Chat GPT & apps family

General Purpose Applications

- An All-Encompassing Expert in All Areas
- A Personalized Tutor
- Transcription
- Summarization

Chat GPT & apps family

General Purpose Applications

- **Simplification**
- **Special Needs and Learning Difficulties**
- **Research**
- **Coding**
- **Images, Videos, and Presentations**

Chat GPT & apps family

General Purpose Applications

- **Text to Speech**
- **New Content Generation**
- **Conversations**
- **Impersonating Famous Characters**
- **Case study**

Chat GPT & apps family

Applications for Reading

- Summarize Texts of Any Length
- Reading Comprehension Assistance
- Rewrite Texts for Different Age/Grade Levels
- Extract Main Ideas in Various Formats

Chat GPT & apps family

Applications for Reading

- **Personalized Reading Plans**
- **Identify Entities and References**
- **Rewrite for Special Learning Needs**
- **Rewrite to Change Tone or Customize for Emotional Issues**
- **Perform Sentiment Analysis**

Chat GPT & apps family

Applications for Reading

- Rewrite in the Style of Any Writer
- Text-to-Speech Conversion
- Change Literary Formats
- Rewrite with Alternative Endings or Plot Changes
- Analyze Text for Biases and Hidden Meanings

Chat GPT & apps family

Applications for Writing

- **Generating Outlines for Any Topic or Idea**
- **Unlimited Text Generation in Various Styles and Lengths**
- **Text Rewriting for Improvement or Style Change**
- **Inclusion of References and Citations**

Chat GPT & apps family

Applications for Writing

- **Grammar and Style Correction**
- **Personalized Feedback**
- **Writer's Assistance**
- **Writing Templates**
- **Act as an Editor**

Chat GPT & apps family

Applications for Writing

- **On-the-Fly Research and Text Generation**
- **Text Improvement, Correction, and Customization**

<https://weevolvedlabs.org/tbsmenu/>



LEARNERSPACE

Chat GPT & apps family

Mathematics & Science

- Problem solving and related tutoring.
- Real life applications of topics.
- Experiments - simulation.
- Problems that connect with other topics and/or real life situations.
- Simulated data, variations and errors.

Chat GPT & apps family

Mathematics & Science

- Data analysis through Code Interpreter.
- Forensics and other applications.
- Health science applications.
- Food & Nutrition – diets, nutritional info.
- Lab reports, image creation.
- Project feedback

Chat GPT & apps family

Social Sciences

- Interactive reenactment of events.
- Dialogue with historical figures.
- Interactive tours.
- Going back in time.
- Debates and interviews.

Chat GPT & apps family

Social Sciences

- Hypothetical situations.
- Case studies and problems.
- Simulated data for analysis.

Chat GPT & apps family

Foreign Languages

- Personalized reading materials.
- Dialogue and correction.
- Translation.
- Tour guides.
- Near future – oral conversations.

Chat GPT & apps family

Social Emotional Learning

- **Stories and fictional scenarios.**
- **Dialogues.**
- **Icebreakers and activities related to topics.**
- **Themed meditations.**
- **Simulated mediation and conflict resolution.**

Chat GPT & apps family

Technology

- **Code generation.**
- **Webpage design.**
- **Debugging and code checking.**

Ethical and social implications

AI Image Generation

- **Is it Art?**
- **Concerns for digital art industry.**

Ethical and social implications

AI Image Generation

- **Misuse and Misrepresentation of AI-Generated Images**
- **Privacy and Consent Concerns**
- **Deepfakes and Non-consensual Content Issues**
- **Bias and Stereotypes in AI Image Generation**

Ethical and social implications

AI Image Generation

- **Ownership and Intellectual Property Rights Challenges**
- **Authenticity and Trust Concerns in Visual Media**
- **Psychological and Emotional Impact of AI-Generated**

Ethical and social implications

AI and advanced tech applications

- Unaddressed important implications of tech advances.
- Students are generally unaware of some of the deeper issues related to technology.
- These range from ethical dilemmas and deep fakes to privacy issues.

MIT Moral Machine



[Home](#) [Judge](#) [Classic](#) [Design](#) [Browse](#) [About](#) [Feedback](#)



The COVID-19 crisis has forced people to confront difficult ethical challenges. If you are comfortable answering a few brief questions on this topic, please click [here](#).



[COVID-19](#)



Moral Machine - Human Perspectives on Machi...



Watch later



Share



By GrandWikhan (Own work) [CC BY-SA 4.0 (http://creativecommons.org/licenses/by-sa/4.0/)], via Wikimedia Commons

My Goodness MIT

Welcome to MyGoodness!

There are over [one million](#) registered charities in the United States alone, and many more worldwide. How do you choose among them?

MyGoodness is a simple game that helps you understand how you give. In the game, you will make 10 giving decisions. Each decision is between two choices, and you tell us which you prefer.

At the end of the game, we give you a summary of your 'goodness' and how it compares to others. You can share that feedback with whomever you would like.



Start Game!

View instructions (recommended)

MIT Detect Fakes

Detect Fakes

About

Informed Consent

Can you spot the DeepFake video?





Harvard Project Implicit



Project Implicit

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Gender-Career IAT

Gender - Career. This IAT often reveals a relative link between family and females and between career and males.

Asian IAT

Asian American ('Asian - European American' IAT). This IAT requires the ability to recognize White and Asian-American faces, and images of places that are either American or Foreign in origin.

Weapons IAT

Weapons ('Weapons - Harmless Objects' IAT). This IAT requires the ability to recognize White and Black faces, and images of weapons or harmless objects.

Sexuality IAT

Sexuality ('Gay - Straight' IAT). This IAT requires the ability to distinguish words and symbols representing gay and straight people. It often reveals an automatic preference for straight relative to gay people.

Disability IAT

Disability ('Physically Disabled - Physically Abled' IAT). This IAT requires the ability to recognize figures representing physically disabled and physically abled people.

Native IAT

Native American ('Native - White American' IAT). This IAT requires the ability to recognize last names that are more likely to belong to Native Americans versus White Americans.

Weight IAT

Weight ('Fat - Thin' IAT). This IAT requires the ability to distinguish faces of people who are obese and people who are thin. It often reveals an automatic preference for thin people relative to fat people.

Age IAT

Age ('Young - Old' IAT). This IAT requires the ability to distinguish old from young faces. This test often indicates that Americans have automatic preference for young over old.

Gender-Science IAT

Gender - Science. This IAT often reveals a relative link between liberal arts and females and between science and males.

"Terrific. . . . Art and science meet an engaged mind
and the friction produces real fire." —*The New Yorker*

The Most Human

Human



What

Artificial Intelligence

Teaches Us About Being Alive

B r i a n C h r i s t i a n

Conclusions - Discussion

This is just the beginning

- **Chat GPT elevates the threshold of cognitive skills at every level.**
- **What constitutes cheating?**
- **Different standards for adults and students?**

Conclusions - Discussion

This is just the beginning

- Which learning / cognitive skills do we need to build up to?
- How are they learned?
- Reassessing assessment, including international exams.
- Current events post Sept 2021 - limitations

Conclusions - Discussion

Implications

- **Redefine cognitive skills per age level.**
- **Closed tech sessions - oral discussions - not pen and paper.**
- **Pre-Chat GPT analysis.**
- **Fact checking and verification.**
- **Creative tasks.**

Conclusions - Discussion

Risks

- **Some cognitive skills at risk.**
 - Reading comprehension.
 - Summarization.
 - Breaking down a real life problem.
- **Chat GPT outperforming students at many age levels.**

Conclusions - Discussion

Benefits

- We can learn a whole lot more.
- Very significant step towards democratization of knowledge.
- Higher threshold for learning skills.
- AI unleashed for human good.

What's next?





gabriel.rshaid@thelearnerspace.org