

Artificial Intelligence Tools For Education

Presented by: HENG Soklay

Scan Me



Agenda

1. Introduction to CADT
2. Generative Artificial Intelligence (AI) Tools
3. Case Study of AI Tools Usage in Cambodia's Higher Education

CADT

IDRI វិទ្យាស្ថានស្រាវជ្រាវ និង នវានុវត្តន៍ឌីជីថល
Institute of Digital Research & Innovation



CADT បណ្ឌិត្យសភាបច្ចេកវិទ្យាឌីជីថលកម្ពុជា
Cambodia Academy of Digital Technology

ជំរុញនវានុវត្តន៍ឌីជីថលនៅកម្ពុជា | Driving Digital Innovation in Cambodia



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About IDRI

- Established by the sub decree on 15 Nov 2021
- Institute of Digital Research and Innovation is a public research institution under the Cambodia Academy of Digital Technology in charge of research and development in digital technology and digital innovation and entrepreneurship promotion.

Vision

- To be Cambodia's flagship research and innovation institute with international recognition in digital technology that addresses key social and economic challenges amid a rapid digital transformation.





IDRI

Cambodia Academy
of Digital Technology

**Institute of Digital
Research and Innovation**



**Digital
Innovation
Center**



**Digital
Research &
Development
Center**



**Digital
Policy
Research
Center**

Digital Research & Development Center



Intelligent Interactive System

- Human-Computer Interaction
- Computer Vision
- Smart City
- Smart Agriculture



Data Science

- Data Engineering
- Data Analysis and Visualization
- Data Modelling



Internet of Things

- Communication Technology
- Smart Application
- IoT Infrastructure



Technology Transfer

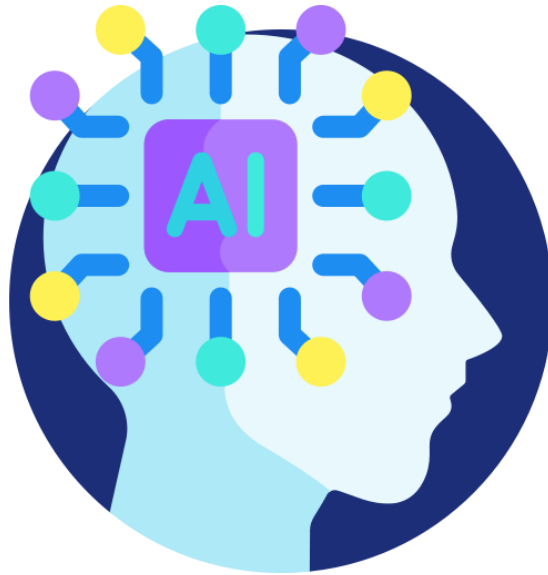
- Convert research outcome to digital product
- Develop digital platforms/ systems/applications

CADT
IDRI

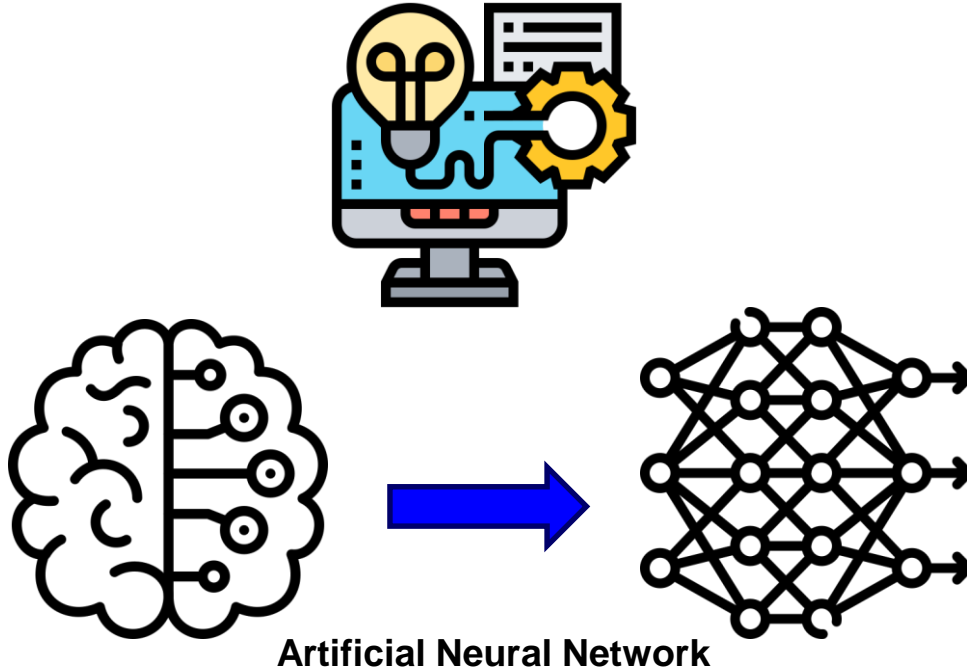
Generative Artificial Intelligence (AI) Tools



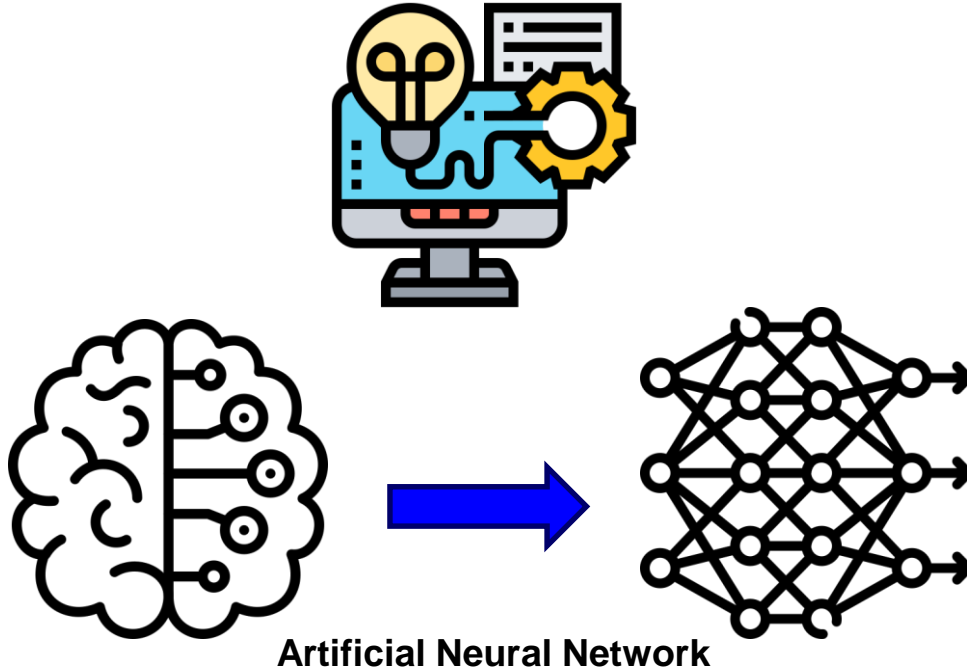
What is Artificial Intelligence?



What is Machine Learning?

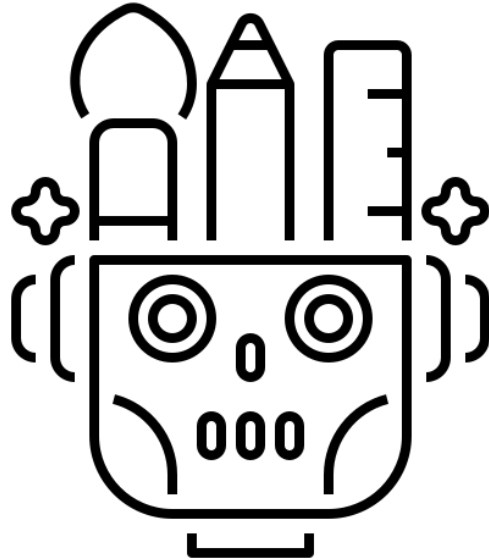


What is machine learning?



What is generative AI?

- Generating new contents from trained data





- A research company that conducts research in a variety of areas related to AI, including machine learning, robotics, and computer vision in a way that benefits humanity as a whole
- **Establishment:** December 2015 by Elon Musk, Ilya Sutskever, Greg Brockman, Wojciech Zaremba, and Sam Altman
- **Location:** headquarters in San Francisco and California, offices around the world like London, New York, Canada...

- Develop and open-source AI models and tools that can be used by other researchers and developers



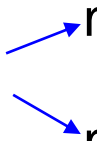
DALL-E2

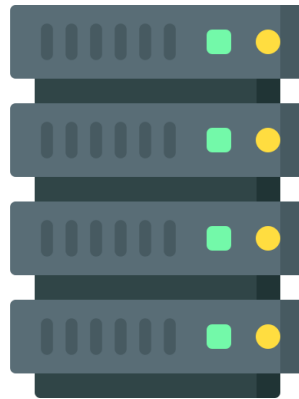
Large language model **GPT-1, 2, 3, and 4**



What is large language model (LLM)?

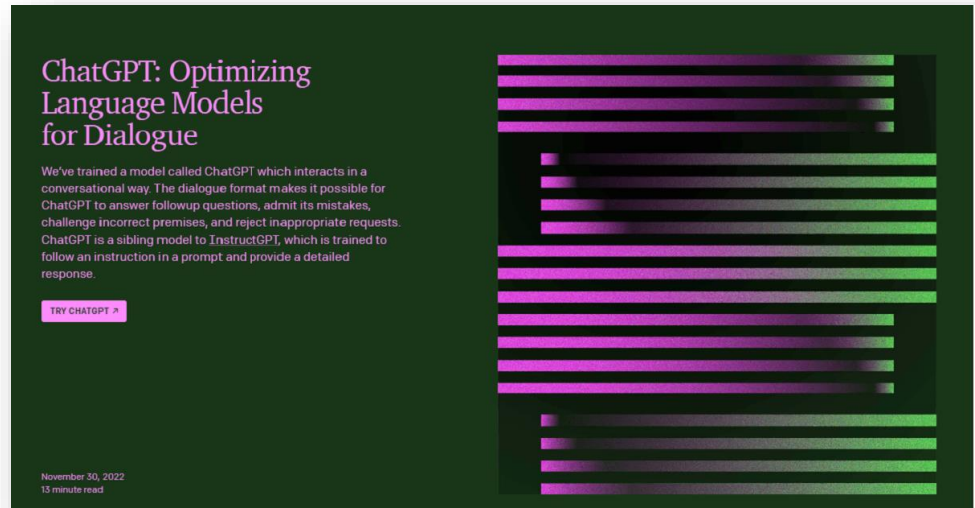
- Predicting next word based on word sequence

- I eat a  man go.
mango.





ChatGPT - A chatbot to generate human-like responses to a wide variety of prompts



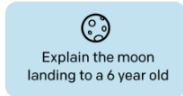
How is ChatGPT trained?

- Trained on a massive diverse dataset of internet text, including articles, books, web pages...
- Fine-tuned on GPT-3.5 for conversational language understanding and generation
- Trained with a combination of supervised learning and reinforcement learning (**Reinforcement Learning from Human Feedback**)

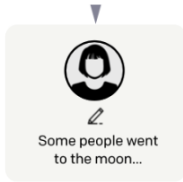
Step 1

Collect demonstration data, and train a supervised policy.

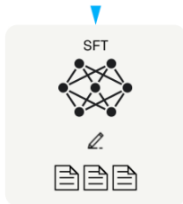
A prompt is sampled from our prompt dataset.



A labeler demonstrates the desired output behavior.



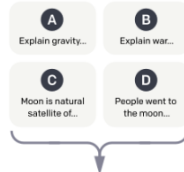
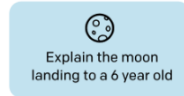
This data is used to fine-tune GPT-3 with supervised learning.



Step 2

Collect comparison data, and train a reward model.

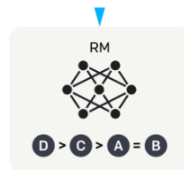
A prompt and several model outputs are sampled.



A labeler ranks the outputs from best to worst.



This data is used to train our reward model.



Step 3

Optimize a policy against the reward model using reinforcement learning.

A new prompt is sampled from the dataset.



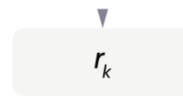
The policy generates an output.



The reward model calculates a reward for the output.



The reward is used to update the policy using PPO.



ChatGPT Use Cases

Explanations of complex issues

The screenshot shows a chat interface with a dark sidebar on the left and a main chat area on the right. The sidebar contains a 'New chat' button and a list of previous conversations, including 'Help Request Receive', 'New chat', and 'សំណួរការសំរាប់អ្នក' (Questions for you). The main chat area shows a user's question: 'I heard that the world is flat. Is it true? Give me three statements to support your ideas'. The AI's response, generated by GPT-4o, explains that the flat earth theory is a conspiracy theory debunked by scientific evidence. It provides three supporting statements: 1. The Earth's shadow during lunar eclipses is curved, consistent with a round Earth but not a flat one. 2. The horizon always appears curved, consistent with a round Earth but not a flat one. 3. The Earth's gravity affects all objects equally, which would not be possible if the Earth were flat. The response concludes by noting that these are just a few pieces of evidence supporting the fact that the Earth is round, and that this understanding is a fundamental aspect of modern science and technology. A 'Regenerate response' button is visible below the AI's text.

Learning code, writing code, debugging code

The screenshot shows a chat application interface. On the left is a dark sidebar with a list of chat topics: '+ New chat', 'Help Request Receive', 'ChatGPT Release Date', 'ChatGPT: Language Modelin', 'Learn Basic French Phrases', 'New chat', 'Cambodia Location Summary', 'Clear conversations', and 'Dark mode'. The main chat area has a white background. At the top, a user message (indicated by an orange 'HE' icon) asks to write Python code to concatenate 'The result is' and '1'. Below it, an AI response (indicated by a green OpenAI logo) provides an example of the code. The code is displayed in a dark-themed code block with syntax highlighting. To the right of the code block is a 'Copy code' button. Below the code block, the AI explains the code: 'In this example, a variable called "result" is defined and assigned the value 1. A new variable called "result_string" is then defined and assigned the value "The result is" concatenated with the string representation of the variable "result" using the "+" operator. The result is then printed to the console using the print function.'

+ New chat

Help Request Receive

ChatGPT Release Date

ChatGPT: Language Modelin

Learn Basic French Phrases

New chat

Cambodia Location Summary

Clear conversations

Dark mode

HE write a Python code to concatenate "The result is" and "1".

Here is an example of how you could write a Python code to concatenate the string "The result is" and the number "1":

```
result = 1
result_string = "The result is " + str(result)
print(result_string) # Output: The result is 1
```

Copy code

In this example, a variable called "result" is defined and assigned the value 1. A new variable called "result_string" is then defined and assigned the value "The result is" concatenated with the string representation of the variable "result" using the "+" operator. The result is then printed to the console using the print function.

Translation

The screenshot displays a chat interface with a dark sidebar on the left and a main chat area on the right. The sidebar contains the following menu items: "New chat", "Help Request Received" (with a dropdown arrow), "Clear conversations", "Dark mode", "OpenAI Discord", and "Updates & FAQ". The main chat area shows a user message with an orange "HE" icon: "translate 'ChatGPT is wonderful' to Khmer". Below it is a response from the AI with a green OpenAI logo icon: "'ChatGPT is wonderful' in Khmer is 'ChatGPT ក៏ស្បើណាស់'". To the right of the response are thumbs up and thumbs down icons. At the bottom of the chat area is a "Regenerate response" button and a text input field with a send arrow.

Course syllabus design



build an intensive course syllabus for data science which lasts 45 hours



Course Title: Introduction to Data Science

Course Description: This 45-hour course provides an introduction to data science, covering the foundational concepts, tools, and techniques necessary for analyzing and interpreting large and complex data sets. The course will focus on developing skills in data analysis, data visualization, and machine learning using Python.

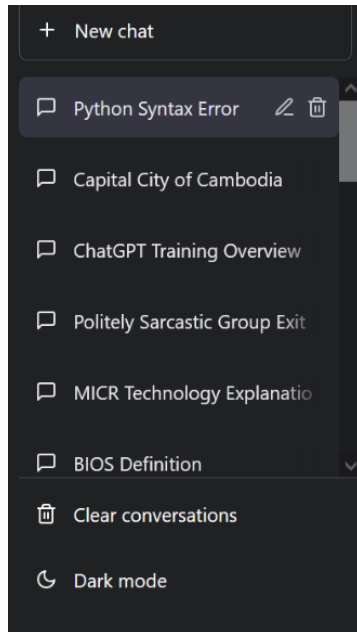
Course Objectives:



- Understand the fundamental concepts and principles of data science
- Learn how to work with data sets, clean and preprocess data, and perform exploratory data analysis
- Develop proficiency in data visualization techniques and tools, including plotting and graphing data
- Learn the basics of machine learning, including supervised and unsupervised learning,




Stop generating



Solving mathematics



 There are 10 pots exposed in the shop, 2 of which have hidden defects. The customer buys two pieces. What is the probability that at least one of them has a hidden bug? 

 Let's call the event of selecting a pot with a hidden defect "Defect".  

There are a total of 10 pots, 2 of which have defects, so the probability of selecting a pot with a defect is $2/10 = 1/5$.

The probability of not selecting a pot with a defect is $(10-2)/10 = 4/5$.

When selecting two pots, the probability of both pots not having a defect is $(4/5) * (4/5) = 16/25$.

Therefore, the probability of at least one pot having a defect is $1 - (16/25) = 9/25$.

So, the probability of at least one of the two pots having a hidden defect is $9/25$.

Writing stories, paragraphs, and essays

The screenshot shows a chat interface with a dark sidebar on the left and a main chat area on the right. The sidebar contains several menu items: 'New chat', 'ជំនួយការសំរាប់អ្នក' (Help for you), 'Help Request Received', another 'New chat', another 'Help Request Received', 'Clear conversations', 'Dark mode', 'OpenAI Discord', and 'Updates & FAQ'. The main chat area shows a user prompt: 'write a short paragraph about Cambodia'. Below it is an AI response, indicated by a green icon, which reads: 'Cambodia is a country located in Southeast Asia, bordered by Thailand, Laos, Vietnam, and the Gulf of Thailand. The official language is Khmer and the capital and largest city is Phnom Penh. The country has a rich cultural heritage, with the famous Angkor Wat temple complex being a major tourist attraction. Cambodia has a complex history, including periods of colonization, war, and genocide under the Khmer Rouge regime in the 1970s. Today, the country is still recovering from the trauma of this period, but is making progress in areas such as economic development and tourism.' There are thumbs up and thumbs down icons next to the response. Below the response is a 'Regenerate response' button and a text input field with a cursor and a send arrow.

Text summarization

The screenshot shows a chat interface with a sidebar on the left and a main chat area on the right. The sidebar contains a list of chat items: '+ New chat', 'Help Request Receive', 'ChatGPT Release Date', 'ChatGPT: Language Modelin', 'Learn Basic French Phrases', 'New chat', 'Cambodia Location Summary', 'Clear conversations', and 'Dark mode'. The main chat area shows a user message: 'Summarize Titanic story'. The AI response, from GPT-4o, provides a summary of the film 'Titanic', including its release year (1997), director (James Cameron), and a detailed description of the plot, characters (Rose and Jack), and the ship's fate.

+ New chat

Help Request Receive

ChatGPT Release Date

ChatGPT: Language Modelin

Learn Basic French Phrases

New chat

Cambodia Location Summary

Clear conversations

Dark mode

HE Summarize Titanic story

The Titanic is a historical fiction romance and disaster film directed by James Cameron and released in 1997. The film is a fictionalized account of the sinking of the RMS Titanic and the love story between a wealthy young woman named Rose and a penniless artist named Jack.

The story takes place in April 1912, the Titanic sets sail from Southampton, England, for New York City. On board, Rose, a first-class passenger, is engaged to Cal, a wealthy businessman, but she feels trapped and unfulfilled by her life. She meets Jack, a third-class passenger, and they fall in love.

However, the ship hits an iceberg and begins to sink. In the chaos, Rose and Jack try to find a way to survive, but they are separated and Jack dies. Rose survives and is rescued by a lifeboat.

In the end, Rose is rescued and returns to New York, where she tells the story of the Titanic's

Literature review



write an abstract for a conference research paper for Khmer fingerspelling



Title: Developing a Machine Learning Model for Khmer Fingerspelling Recognition

Abstract:

Khmer fingerspelling is a manual communication system used by the deaf community in Cambodia. The system is based on hand gestures representing the Khmer alphabet and is an important means of communication for those who cannot hear or speak. However, the recognition of Khmer fingerspelling poses a significant challenge due to the complexity and variability of hand gestures. In this research paper, we present a machine learning model for Khmer fingerspelling recognition using convolutional neural networks (CNN). We collected a dataset of Khmer fingerspelling gestures performed by deaf individuals and trained a CNN model to recognize the gestures. The model achieved an accuracy of 89% on a test set of Khmer fingerspelling gestures. We also analyzed the performance of the model on different variations of the Khmer fingerspelling

Stop generating



Research policy writing

HE

write a research policy of internet governance in Cambodia



Research Policy of Internet Governance in Cambodia

1. Introduction

The rapid development of the internet has transformed the way we live, work, and communicate. In Cambodia, the internet has become an essential tool for social, economic, and political development. However, as with any technology, the internet poses challenges and risks that require careful management. Internet governance refers to the mechanisms, processes, and institutions that shape the development and use of the internet. The purpose of this research policy is to provide a framework for conducting research on internet governance in Cambodia.

2. Objectives

The objectives of this research policy are to:

- Identify key stakeholders in the internet system in Cambodia
- Analyze the policies and regulations that govern the internet in Cambodia



Project proposal writing



write a project proposal of Khmer Chatbot



Project Proposal: Khmer Chatbot

Project Overview:

The objective of this project is to design and develop a Khmer chatbot, an AI-powered conversational agent that can interact with users in the Khmer language. The chatbot will be designed to respond to user queries, provide information, and offer assistance in various domains, including but not limited to health, finance, education, and entertainment.

Background:

Khmer is the official language of Cambodia, spoken by over 16 million people worldwide. While many people in Cambodia speak English, there is still a significant population that prefers to communicate in Khmer. Furthermore, there is a growing need for automated chatbots that can provide instant assistance and support to users, especially during the ongoing COVID-19 pandemic.

Stop generating



Creativity design



write an eye-catching slogan and build a brand name for my organic food start up



Brand Name: "PureGarden"



Slogan: "Savor the taste of nature with PureGarden's organic delights!"

or

"From the garden to your plate, taste the freshness with PureGarden!"

or

"PureGarden - where quality meets nature."

or

"Elevate your health with PureGarden's organic goodness."

Digital marketing



write marketing strategy to sell shampoo product for me



Title: Refreshing Radiance Shampoo Marketing Strategy

I. Executive Summary

Refreshing Radiance is a premium shampoo product, formulated with natural ingredients to provide a deep clean, nourish hair, and enhance its natural shine. Our target audience is health-conscious consumers who prioritize high-quality, eco-friendly products. This marketing strategy outlines our approach to positioning, promoting, and selling Refreshing Radiance in a competitive market.

II. Market Analysis

A. Market Segmentation

1. Age: 18-55-year-olds



Limitations

- Not always up-to-date
- Not sound naturally sometimes
- Not always accurate

Subscription Plan

Free Plan

Your Current Plan

- ✓ Available when demand is low
- ✓ Standard response speed
- ✓ Regular model updates

ChatGPT Plus USD \$20/mo

Upgrade plan

- ✓ Available even when demand is high
- ✓ Faster response speed
- ✓ Priority access to new features

Note: VPN is needed in Cambodia.


GPT-3.5 Vs GPT-4


Model
Legacy (GPT-3.5) ✓


Default (GPT-3.5)

Legacy (GPT-3.5) ✓

The previous ChatGPT Plus model

Reasoning 

Speed 

Conciseness 

Model
GPT-4 ✓

Default (GPT-3.5)


Legacy (GPT-3.5)


GPT-4 ✓


GPT-4

Our most advanced model, available to Plus subscribers.

GPT-4 excels at tasks that require advanced reasoning, complex instruction understanding, and more creativity.

Reasoning 

Speed 





Conciseness 

ChatGPT **PLUS**


GPT-3.5 Vs GPT-4





Model: Default (GPT-3.5)

ID There are 10 murderers in a room. I kill 1 murder in the room. How many murderers are left in the room?

 If there were originally 10 murderers in the room and you killed one of them, then there would be 9 murderers left in the room.   

Model: GPT-4

ID There are 10 murderers in a room. I kill 1 murder in the room. How many murderers are left in the room? 

 After you kill 1 murderer, there are 9 murderers left in the room. However, since you have killed someone, you have also become a murderer. Therefore, there are still 10 murderers in the room.   

GPT-3.5 Vs GPT-4

Model: Legacy (GPT-3.5)



តើ ក្នុង ខ្លួន វា មាន តើ មាន កម្មវិធី ណា ខ្លះ ទៀត?



ក្នុង ខ្លួន វា មាន កម្មវិធី ណា ខ្លះ ទៀត ដែល មាន ប្រវត្តិ ច្បាស់ លាស់ និង សកម្ម ភាព ដែល មាន ភារកិច្ច ពិសេស ។ វា មាន ភាសា កម្រ និង ព្រឹត្តិករ ណា ខ្លះ ទៀត ដែល ខ្លួន វា មិន បាន ប្រើ ប្រាស់ ប្រហែល គឺ មាន រយៈ ពេល ប្រវត្តិ ច្បាស់ លាស់ ពី រយ ឆ្នាំ មុន មក ដល់ ឥឡូវ នេះ ។



Model: GPT-4



តើ ក្នុង ខ្លួន វា មាន តើ មាន កម្មវិធី ណា ខ្លះ ទៀត?



ក្នុង ខ្លួន វា មាន តើ មាន កម្មវិធី ណា ខ្លះ ទៀត ដែល ស្ថិត ទៅ ក្នុង ចំណាត់ ថ្នាក់ ។ វា មាន រយៈ កម្រិត ប្រហែល ១,៨១៣ ម៉ែត្រ (៥,៩៤៩ ហិកតា) ។



Challenges



Not available

OpenAI's services are not available in your
country.

Should I give up on AI tool?

The screenshot shows the Bing homepage with the following elements:

- Header:** The Bing logo on the left, and a "Sign in" button, a notification bell with the number "6", and a menu icon on the right.
- Navigation:** Links for "See Examples", "Features", "FAQ", and a share icon.
- Announcement:** A banner stating "Now you can search, chat, and create, all in one place. Turn your words into images with the new Bing's AI-powered Image Creator in chat" with a "Learn More" link and a close button.
- Main Content:** A large blue heading "Introducing the new Bing" followed by the sub-headline "Ask real questions. Get complete answers. Chat and create." Below this is the text "Unlock the full experience on Microsoft Edge" and a prominent blue button that says "Open in Microsoft Edge".


www.bing.com/?/ai

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Introducing Notion AI

Access the limitless power of AI, right inside Notion.
Work faster. Write better. Think bigger.

[Get started](#)



<https://www.notion.so/product/ai>



CHAT GPT

This project is using ChatGPT(Latest version the smartest one).
You can use this chat for free without: **VPN, login and safe.**

Ask me anything...

- គេហទំព័រ khmerGPT បង្កើតឡើងគោលបំណងដង្ហែ បងប្អូនបានសាកល្បងនូវ បច្ចេកវិទ្យាពិភពលោកថ្មីគឺCHATGPT ដោយមិនបាច់ ប្រើប្រាស់ VPN និង LOGIN។
- គេហទំព័រ khmerGPT ក៏បានបញ្ជាក់ច្បាស់ៗ តាំងពីថ្ងៃបង្កើតឡើងថា This project is using ChatGPT(Latest version the smartest one) ហើយនៅក្នុងគេហទំព័រក៏ បានបញ្ជាក់ច្បាស់ថា Powered by OpenAI
- គេហទំព័រគ្មានបានចំនួនអ្វីទេ ក្រៅតែបងប្អូនមួយចំនួនតូចជួយបរិច្ចាគថវិការ ខ្លះប៉ុណ្ណោះ!

Type / for suggestions

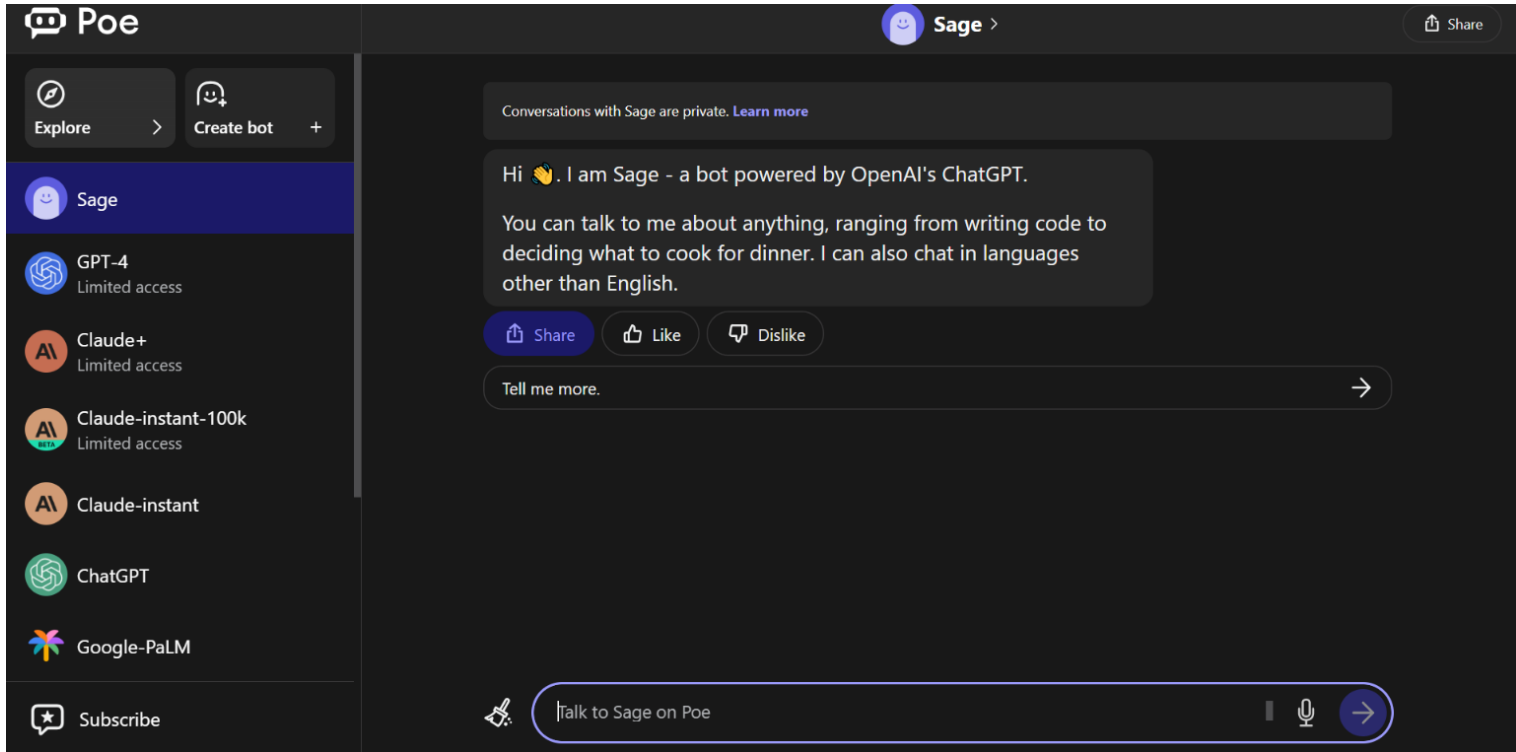
Settings @



Have any issues?

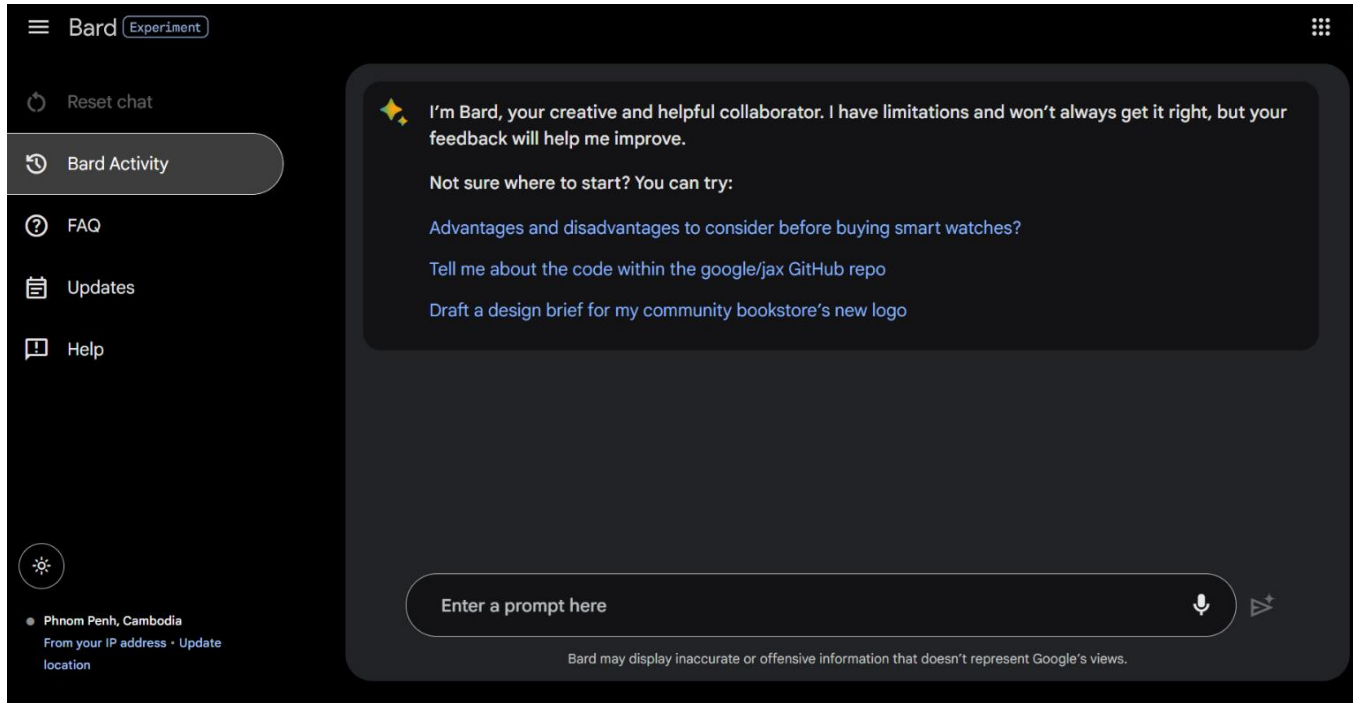
Powered by OpenAI (Hosting by **Apsaralab**) like us on Facebook **Khmergpt**

<https://khmergpt.com/>



<https://poe.com/>

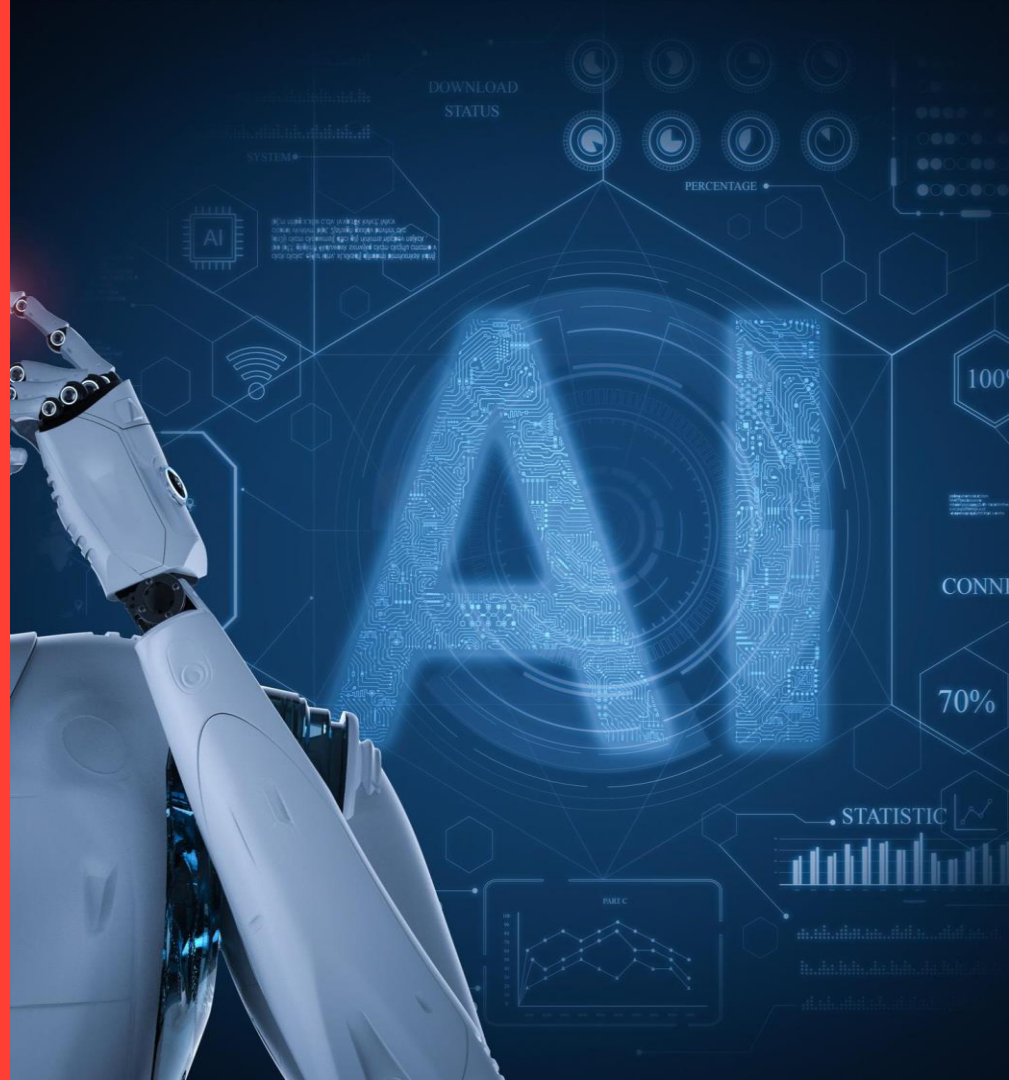
Powered by Google



<https://bard.google.com/>

**CADT
IDRI**

Case Study of AI Tools Usage in Cambodia's Higher Education

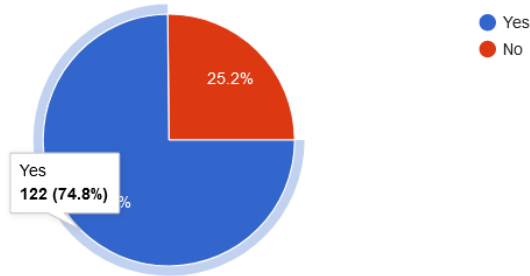


- Do these emerging technologies help bridge or widen the pre-existing digital divide?
- What are the benefits and risks of these emerging technologies in higher education?

Students' responses

Have you ever used AI-tools before? (Ex: ChatGPT)

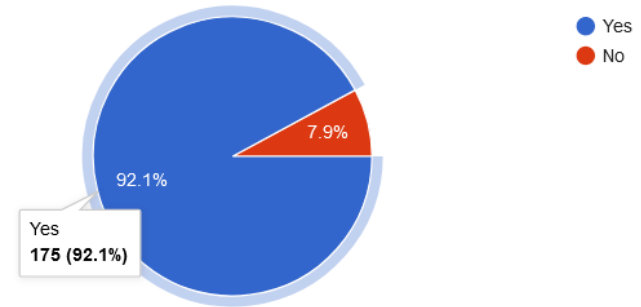
163 responses



Universities in provinces

Have you ever heard Artificial Intelligence or used AI-tools before? (Ex: ChatGPT)

190 responses

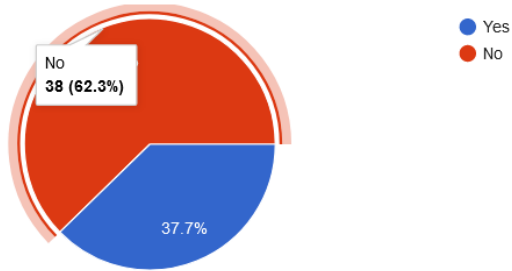


Universities in Phnom Penh

Lecturers' responses

Have you ever used AI-tools before? (Ex: ChatGPT)

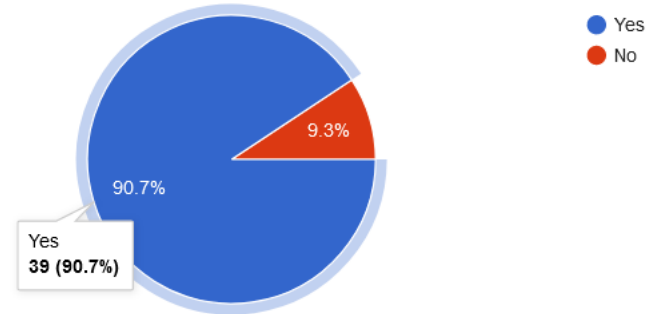
61 responses



Universities in provinces

Have you ever used AI-tools before? (Ex: ChatGPT)

43 responses



Universities in Phnom Penh

Benefits of these tools

Students

- general information searches
- assistance with their homework
- acquiring new skills
- writing paragraphs and essays
- learning foreign languages
- seeking feedback
- practicing for exams
- debugging, and coding lessons

Lecturers

- search for general information
- generate quizzes and exams
- designing course syllabus and lessons
- creating classroom content
- generating code
- detecting plagiarism.

Note: 88.7% of lecturers think that AI tools should be allowed for use in higher education. They also mention that students should use tools for searching general information, assisting assignment or homework, and asking for feedback.

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Risks of these tools

The survey shows 172 out of 354 students stated that the tools do not help their thinking but instead provide direct answers. The lecturers also raise concerns that these tools can make students lazy and disimprove their study and even encourage academic misconduct.

Suggestions

- 1. Regulation**
- 2. Teaching Paradigm Shift**
- 3. Ethics in AI**
- 4. Digital Literacy and Upskilling**



@SOKLAYHENG

Thank You!

References:

- Ramponi, M. (2023, January 12). *How ChatGPT actually works*. News, Tutorials, AI Research.
<https://www.assemblyai.com/blog/how-chatgpt-actually-works/>
- *ChatGPT: Optimizing Language Models for Dialogue*. (2023, January 25). OpenAI. Retrieved January 26, 2023, from <https://openai.com/blog/chatgpt/>