

Chatbot Evolved: ChatGPT and Generative Text Models

You may have been hearing a lot about chatbots in the media recently. That's because ChatGPT, a new artificial intelligence chatbot from OpenAI has taken the Internet by storm. Released in November 2022, ChatGPT had [one million users](#) within a week, and 100 million within two months, making it the [fastest-growing consumer application in history](#).

ChatGPT can help you to write a resume, generate ideas for a first date, compose jokes, songs, and poetry, and even teach you coding and complex technical topics.

If you don't quite get the response you were looking for at first, you can keep talking with ChatGPT. One of the ways that ChatGPT is revolutionary is because it uses the context from ongoing conversations to generate better responses.

ChatGPT is a brand new kind of chatbot driven by a Generative Text AI model. These types of AI models basically function as a very advanced auto-complete, taking what you have typed in before and using that information to generate new text.

The core base AI model ChatGPT is built on is called GPT3.5, which was trained on a huge dataset of billions of pages of books, articles, Wikipedia, and other websites to understand a wide variety of topics.

You can give GPT3.5 a “prompt” of some starting text, and it will do its best to “complete” the text. For example, if we prompt it with: “Write a simple Trini Macaroni Pie recipe,” ChatGPT responds with:

Sure! Here's a simple recipe for Trini Macaroni Pie:

Ingredients:

- 2 cups macaroni
- 2 tablespoons butter
- 1 small onion, finely chopped
- 2 cloves garlic, minced
- 1/2 cup sweet pepper, finely chopped
- 1/2 cup cooked ham or bacon, chopped (optional)
- 2 cups grated cheddar cheese
- 2 cups milk
- 3 eggs
- 1/4 teaspoon black pepper
- 1/4 teaspoon paprika
- Salt to taste

Instructions:

1. Preheat your oven to 350°F (175°C). Grease a baking dish and set it aside.
2. Cook the macaroni according to the package instructions until al dente. Drain and set aside.
3. In a large skillet, melt the butter over medium heat. Add the chopped onion, minced garlic, and sweet pepper. Sauté until the vegetables are tender, about 5 minutes. If using ham or bacon, add it to the skillet and cook for an additional 2 minutes.
4. In a large bowl, combine the cooked macaroni, sautéed vegetables (and ham/bacon), and 1 1/2 cups of grated cheddar cheese. Mix well to distribute the ingredients evenly.
5. In a separate bowl, whisk together the milk, eggs, black pepper, paprika, and salt. Pour this mixture over the macaroni mixture and gently stir until everything is well combined.
6. Pour the macaroni mixture into the greased baking dish and spread it out evenly. Sprinkle the remaining 1/2 cup of grated cheddar cheese on top.
7. Bake in the preheated oven for about 30-35 minutes or until the top is golden brown and the pie is set in the center.
8. Remove the macaroni pie from the oven and allow it to cool for a few minutes before serving. Cut into squares or wedges and serve warm.

Enjoy your delicious Trini Macaroni Pie!



Sure! Here's a simple recipe for Trini Macaroni Pie:



Ingredients:

- 2 cups macaroni
- 2 tablespoons butter
- 1 small onion, finely chopped
- 2 cloves garlic, minced
- 1/2 cup sweet pepper, finely chopped
- 1/2 cup cooked ham or bacon, chopped (optional)
- 2 cups grated cheddar cheese
- 2 cups milk
- 3 eggs
- 1/4 teaspoon black pepper
- 1/4 teaspoon paprika
- Salt to taste

Instructions:

1. Preheat your oven to 350°F (175°C). Grease a baking dish and set it aside.
2. Cook the macaroni according to the package instructions until al dente. Drain and set aside.
3. In a large skillet, melt the butter over medium heat. Add the chopped onion, minced garlic, and sweet pepper. Sauté until the vegetables are tender, about 5 minutes. If using ham or bacon, add it to the skillet and cook for an additional 2 minutes.
4. In a large bowl, combine the cooked macaroni, sautéed vegetables (and ham/bacon), and 1 1/2 cups of grated cheddar cheese. Mix well to distribute the ingredients evenly.
5. In a separate bowl, whisk together the milk, eggs, black pepper, paprika, and salt. Pour this mixture over the macaroni mixture and gently stir until everything is well combined.
6. Pour the macaroni mixture into the greased baking dish and spread it out evenly. Sprinkle the remaining 1/2 cup of grated cheddar cheese on top.
7. Bake in the preheated oven for about 30-35 minutes or until the top is golden brown and the pie is set in the center.
8. Remove the macaroni pie from the oven and allow it to cool for a few minutes before serving. Cut into squares or wedges and serve warm.

Enjoy your delicious Trini Macaroni Pie!

GPT3.5 understood that I wanted a recipe, so it generated one using the patterns of recipes that it had read online.

That's not quite the Trini macaroni pie that I'm used to, though! It should have evaporated milk, not milk, and it shouldn't have tomato sauce or vegetables.

When the engineers at OpenAI created ChatGPT, they added an easy way for you to type in a response, so that ChatGPT can continue the conversation based on what you say next. Every time you add some new text, the whole conversation chain is fed back into the model, and it continues as a very advanced auto-complete from the end of the chain.

So if I were to type this next, "I think it's supposed to have evaporated milk, not milk."

ChatGPT will reply:

Apologies for the oversight. You're correct; Trini Macaroni Pie traditionally uses evaporated milk. Here's the revised recipe:

Ingredients:

- 2 cups macaroni
- 2 tablespoons butter
- 1 small onion, finely chopped
- 2 cloves garlic, minced
- 1/2 cup sweet pepper, finely chopped
- 1/2 cup cooked ham or bacon, chopped (optional)
- 2 cups grated cheddar cheese
- 1 can (12 ounces) evaporated milk
- 3 eggs
- 1/4 teaspoon black pepper
- 1/4 teaspoon paprika
- Salt to taste

Instructions:

1. Preheat your oven to 350°F (175°C). Grease a baking dish and set it aside.
2. Cook the macaroni according to the package instructions until al dente. Drain and set aside.

3. In a large skillet, melt the butter over medium heat. Add the chopped onion, minced garlic, and sweet pepper. Sauté until the vegetables are tender, about 5 minutes. If using ham or bacon, add it to the skillet and cook for an additional 2 minutes.
4. In a large bowl, combine the cooked macaroni, sautéed vegetables (and ham/bacon), and 1 1/2 cups of grated cheddar cheese. Mix well to distribute the ingredients evenly.
5. In a separate bowl, whisk together the evaporated milk, eggs, black pepper, paprika, and salt. Pour this mixture over the macaroni mixture and gently stir until everything is well combined.
6. Pour the macaroni mixture into the greased baking dish and spread it out evenly. Sprinkle the remaining 1/2 cup of grated cheddar cheese on top.
7. Bake in the preheated oven for about 30-35 minutes or until the top is golden brown and the pie is set in the center.
8. Remove the macaroni pie from the oven and allow it to cool for a few minutes before serving. Cut into squares or wedges and serve warm.

Now you have the revised Trini Macaroni Pie recipe with evaporated milk. Enjoy!



Apologies for the oversight. You're correct; Trini Macaroni Pie traditionally uses evaporated milk. Here's the revised recipe:



Ingredients:

- 2 cups macaroni
- 2 tablespoons butter
- 1 small onion, finely chopped
- 2 cloves garlic, minced
- 1/2 cup sweet pepper, finely chopped
- 1/2 cup cooked ham or bacon, chopped (optional)
- 2 cups grated cheddar cheese
- 1 can (12 ounces) evaporated milk
- 3 eggs
- 1/4 teaspoon black pepper
- 1/4 teaspoon paprika
- Salt to taste

Instructions:

1. Preheat your oven to 350°F (175°C). Grease a baking dish and set it aside.
2. Cook the macaroni according to the package instructions until al dente. Drain and set aside.
3. In a large skillet, melt the butter over medium heat. Add the chopped onion, minced garlic, and sweet pepper. Sauté until the vegetables are tender, about 5 minutes. If using ham or bacon, add it to the skillet and cook for an additional 2 minutes.
4. In a large bowl, combine the cooked macaroni, sautéed vegetables (and ham/bacon), and 1 1/2 cups of grated cheddar cheese. Mix well to distribute the ingredients evenly.
5. In a separate bowl, whisk together the evaporated milk, eggs, black pepper, paprika, and salt. Pour this mixture over the macaroni mixture and gently stir until everything is well combined.
6. Pour the macaroni mixture into the greased baking dish and spread it out evenly. Sprinkle the remaining 1/2 cup of grated cheddar cheese on top.
7. Bake in the preheated oven for about 30-35 minutes or until the top is golden brown and the pie is set in the center.
8. Remove the macaroni pie from the oven and allow it to cool for a few minutes before serving. Cut into squares or wedges and serve warm.

Now you have the revised Trini Macaroni Pie recipe with evaporated milk. Enjoy!

Much better! Next, I could ask how to make the breadcrumbs, and what I could use if I don't have a 9-inch baking dish. ChatGPT would use the context of the previous conversation to answer my questions correctly.

This back and forth conversation is what makes ChatGPT so easy and useful.

Risks And Limitations

ChatGPT is a powerful technology, but it also has some risks and limitations. To start, GPT-3 has been pre-trained, meaning it can't learn from each interaction like humans can. Its training data ends with 2021 data, which means it can't answer questions about things that happened after that.

It also has a limited input size of about 3,000 words, so you can't give it too much information. Since it feeds your whole previous conversation back into itself whenever you type something new, you can reach this end more quickly than you realize.

It takes a lot of processing power to generate answers from ChatGPT, and thus a lot of electricity as well. It's been estimated that [ChatGPT style searches take more than 10x as much electricity as today's Google searches.](#)

It's hard to explain why it produces certain outputs. The AI model knows the patterns of the writing in its training data, and it can use those patterns to write new text, but it cannot explain those patterns to us! This is an ongoing problem that researchers are tackling.

There's also a risk that machine-generated content may become hard to tell apart from human-written content, which could cause copyright and plagiarism issues.

Generative text models **are not** trained to be factually accurate! These models are designed to write text in the same pattern as all the training text data that they have seen. They don't have any internal "critical thinking" mechanisms to make sure that what they write is factually correct. As a result, these models tend to "[hallucinate](#)," or make up information. Since they are trained to replicate the patterns of human writing, when they hallucinate, they do it convincingly. This can lead to people believing what they write.

Finally, since it was trained on unfiltered reams of content from the Internet, it has learned and displays biases that it has found there, like racism, sexism, hate speech, and conspiracy theories. Companies like OpenAI work hard to fine-tune their models to reduce these biases and create moderation filters to detect and reject inappropriate generated content, but the filters will never be perfect.

Discussion Question:

- What are the possible outcomes of using ChatGPT or similar AI tools to create content, given the risks and limitations we just mentioned, particularly around the risks of producing inaccurate or biased information?