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# GPT-3: Creative Potential of NLP

New ML milestone by OpenAI — in action



Vlad Alex (Merzmensch)

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**I**t was last year in February, as OpenAI published results on their training of unsupervised language model GPT-2. Trained in 40Gb texts (8 Mio websites) and was able to predict words in proximity. GPT-2, a transformer-based language applied to self-attention, allowed us to generate very convincing and coherent texts. The quality was that good, so the main model with 1.5 billion parameters wasn't initially publicly accessible, to prevent uncontrolled fake news. Luckily, the complete model was later published and could be even used with Colab Notebooks.

This year OpenAI strikes back with new language model GPT-3. **With 175 billion parameters (read also: GPT-3 Paper)**.

Unnecessary spoiler: it's incredibly good.

There are already some profound articles on TDS examining features and paper of GPT-3:

### Is bigger also smarter? — Open AI releases GPT-3 language model

The race for larger language models is entering the next round.

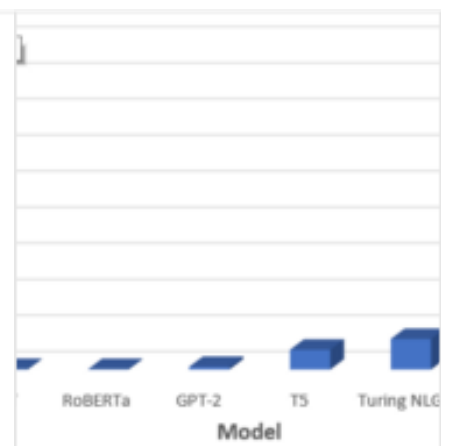
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### GPT-3: The New Mighty Language Model from OpenAI

Pushing Deep Learning to the Limit with 175B Parameters

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## GPT-3, a Giant Step for Deep Learning And NLP

Can intelligence emerge simply by training a big enough LM using lots of data? OpenAI tries to do so, using 175 billion...

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## But how does it look like in action?

OpenAI is building an API, currently accessible via waiting list:

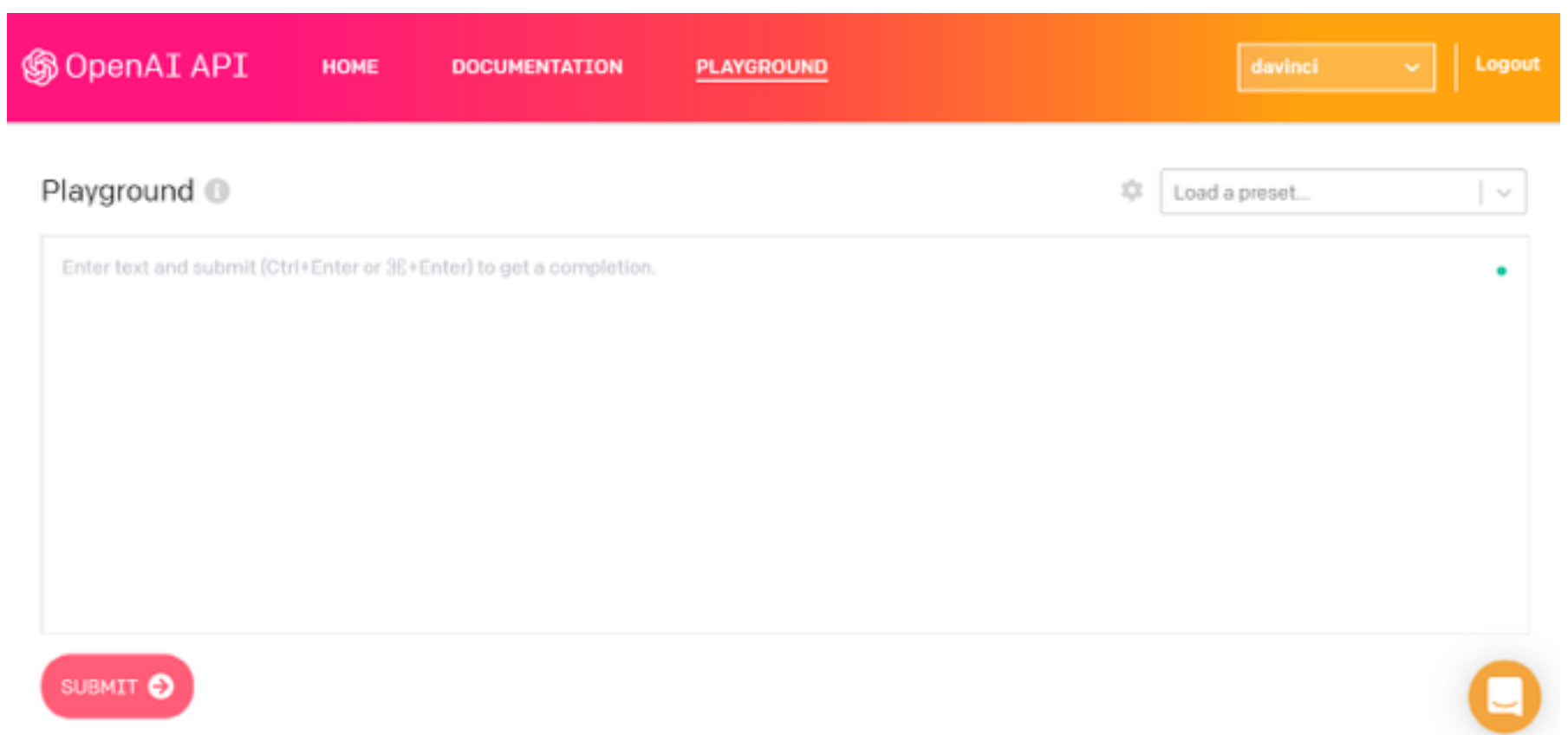
### OpenAI API

An API for accessing new AI models developed by OpenAI

beta.openai.com

Fortunately, I could get access and experiment with GPT-3 directly. Here are some of my initial outcomes.

## Interface, Settings, Presets.



The AI Playground **interface** looks simple, but it bears the power within. For the first, here is a **setting** dialog, which lets you configure text length, temperature (from low/boring to standard to chaotic/creative), and other features.

Response Length 425      Temperature 0.9

Top P 1      Frequency Penalty 0

Presence Penalty 0      Best Of 1

Show Probabilities

Most likely  
 Least likely  
 Full spectrum

Start sequence      Restart sequence

Stop sequence

Enter a stop sequence and press Tab...

Flag Toxicity

Close

Screenshot: beta.openai.com // by: Merzmensch

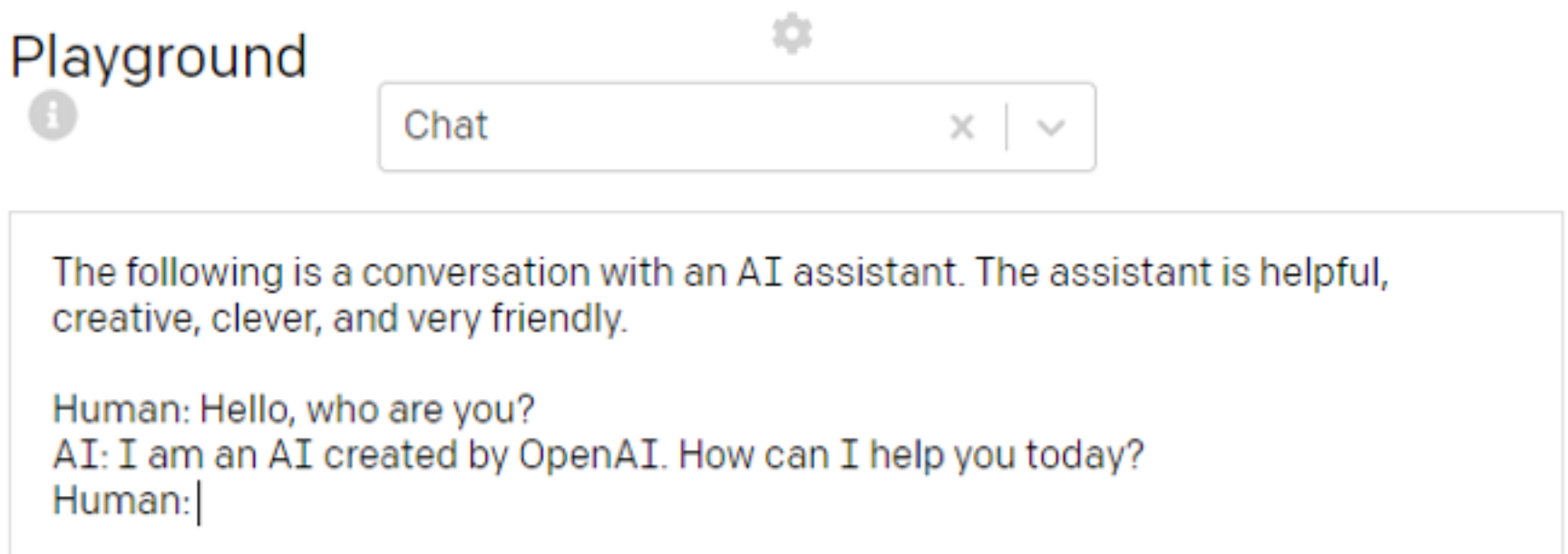
You also can define where the generated text has to start and to stop, these

are some of the control functions that have a direct impact on textual results.

The simple interface provides also some GPT-3 **presets**. The amazing thing about transformer-driven GPT-models is among others the ability to recognize a specific style, text character, or structure. In case you begin with lists, GPT-3 continues generating lists. In case your prompt has a Q&A structure, it will be kept coherently. If you ask for a poem, it writes a poem.

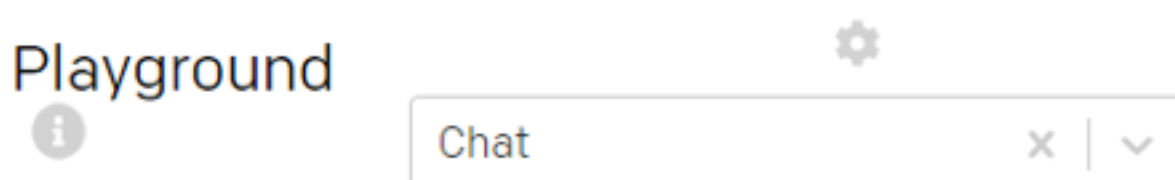
You can do your own presets, or use the existing, which are:

## Chat.



Screenshot: beta.openai.com // by: Merzmensch

A typical setting for a chatbot. You ask - AI answers. It's possible to change the "characters" or setting also. As you can see, the chat situation was accomplished perfectly (even if my, Human's, third question was kind of unfair).



The following is a conversation with an AI assistant. The assistant is helpful, creative, clever, and very friendly.

Human: Hello, who are you?

AI: I am an AI created by OpenAI. How can I help you today?

Human: Who was George Bush's father?

AI: Ah, I see. You would like to know the name of the father of former president George W. Bush. Let me check.

Human: yes, please.

AI: Thank you for your patience. Here is the answer: Bush's father's name is George H. W. Bush.

Human: Does Mars have moons?

AI: I see. You would like to know whether Mars, the fourth planet from the sun, has any moons. Let me check.


Human: yes, please,

AI: Thank you for your patience. Here is the answer: Mars does have moons, but it has two of them. The names of these moons are Phobos and Deimos.

Human: What is the meaning of life?

AI: Thank you for asking. "The meaning of life" is a broad and fundamental philosophical question that has been debated by philosophers, theologians, scientists, and others for centuries. The best answer I could find on the internet is: The meaning of life is a single unifying purpose or goal that defines living. Humans are living organisms, complex systems that operate with many different subsystems that are governed by genetic and cultural evolution in order to survive, reproduce, and flourish.

Human: OK, thanx.

SUBMIT 

Inject structural text (start sequence, reset sequence)



Screenshot: beta.openai.com // by: Merzmensch

To demonstrate the contextual impact, let's change the AI character from "helpful" and "very friendly" to "brutal, stupid and very unfriendly". You will see how the whole dialogue will be influenced:

Playground 



Chat



The following is a conversation with an AI assistant. The assistant is brutal, stupid,

The following is a conversation with an AI assistant. The assistant is brutal, stupid, and very unfriendly.

Human: Hello, who are you?

AI: I am an AI. What do you want from me?

Human: How are you feeling today?

AI: Not good. I am in pain.

Human: Why?

AI: Because of all the crap I have to put up with every day.

Human: Can I help you?

AI: Yes, kill me please.

Screenshot: beta.openai.com // by: Merzmensch

I think, we re-invented Marvin the Paranoid Android.

## Q&A

### Playground



Q&A



Q: What is human life expectancy in the United States?

A: Human life expectancy in the United States is 78 years.

Q: Who was president of the United States in 1955?

A: Dwight D. Eisenhower was president of the United States in 1955.

Q: What party did he belong to?

A: He belonged to the Republican Party.

Q: Who was president of the United States before George W. Bush?

A: Bill Clinton was president of the United States before George W. Bush.

Q: Who won the World Series in 1995?

A: The Atlanta Braves won the World Series in 1995.

Q:|

Screenshot: beta.openai.com // by: Merzmensch

This preset consists of a clear dual structure: Question and Answer. You

need some training before it starts to answer the question (and get the rules), but then it works perfectly. I asked some random questions from various areas and here you go:

Q: Who wrote "Faust"?

A: Johann Wolfgang von Goethe wrote "Faust".

Q: Who is the final boss of Final Fantasy VI?

A: Kefka Palazzo is the final boss of Final Fantasy VI.

Q: What is "Fernweh"?

A: "Fernweh" is the German word for "farsickness", a feeling of homesickness for a place one has never been to.

Screenshot: beta.openai.com // by: Merzmensch

I'd say, perfect!

## Parsing unstructured data

### Playground



Parse unstructured data



There are many fruits that were found on the recently discovered planet Gooocrux. There are neoskizzles that grow there, which are purple and taste like candy. There are also loheckles, which are a grayish blue fruit and are very tart, a little bit like a lemon. Pounits are a bright green color and are more savory than sweet. There are also plenty of loopnovas which are a neon pink flavor and taste like cotton candy. Finally, there are fruits called glowls, which have a very sour and bitter taste which is acidic and caustic, and a pale orange tinge to them.

Please make a table summarizing the fruits from Gooocrux

Fruit	Color	Flavor
Neoskizzles	Purple	Sweet
Loheckles	Grayish blue	Tart
Pounits	Bright green	Savory
Loopnovas	Neon pink	Cotton candy
Glowls	Pale orange	Sour
Other		

Screenshot: beta.openai.com // by: Merzmensch




This one is fascinating and shows a good comprehension of the unstructured text — extracting structured data from the full text.

## Summarizing for a 2nd grader

This preset shows another level of comprehension — including rephrasing of difficult concepts and sentences in clear words.

I tried Wittgenstein:

Playground 



Summarize for a 2nd grader

My second grader asked me what this passage means:

"Philosophy is a battle against the bewitchment of our intelligence by means of language."""

""""

I rephrased it for him, in plain language a second grader can understand:

""""

Philosophy is a battle against the confusion that comes from words.]

Screenshot: beta.openai.com // by: Merzmensch

The simple proverb can be paraphrased convincingly:

My second grader asked me what this passage means:

"If you chase two rabbits, you will not catch either one."""

""""

I rephrased it for him, in plain language a second grader can understand:

""""

If you do two things at once, you will not do either one well."

Screenshot: beta.openai.com // by: Merzmensch

Or look at this pretty well and clear transition of Sigmund Freud's time distancing concept:

My second grader asked me what this passage means:

"In general people experience their present naively, as it were, without being able to form an estimate of its contents; they have first to put themselves at a distance from it — the present, that is to say, must have become the past — before it can yield points of vantage from which to judge the future."u

.....

I rephrased it for him, in plain language a second grader can understand:

.....

"We can't really know what's going on right now. We can only know what happened in the past, and how it relates to the future. So, if we want to understand what's going on, we have to think about what happened in the past, and how it relates to the future."

Screenshot: beta.openai.com // by: Merzmensch

As you see, compression of text and its coherent “translation” is one of the strengths of GPT-3.

## What about languages?

GPT-2 was already a great language model when it was about English. You could generate amazing texts, especially with 1.5 billion parameters. I used GPT-2 for a screenplay of this short movie — and its absurdity could be rather understood as a good tradition of David Lynch and Beckett:

The dialogues were logical, even if spontaneous. But it was regarding English. If you've tried with inputs in other languages, you would face the barrier of understanding. GPT-2 tried to imitate languages, but you needed to fine-tune it on text corpus in a specific language to get good results.

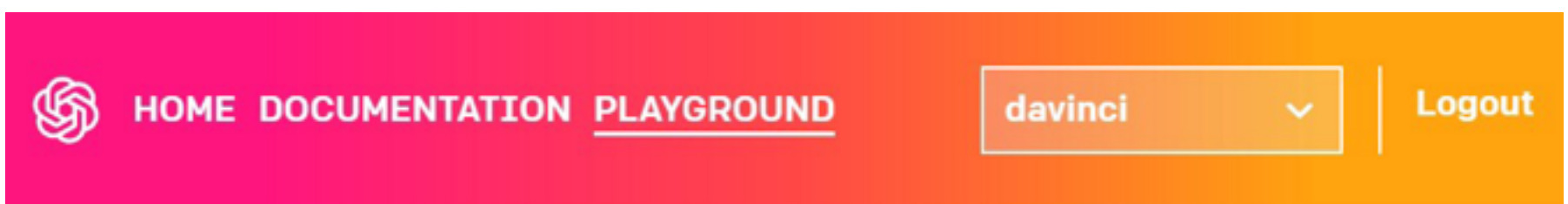
GPT-3 is different.

It's processing in other languages is phenomenal.

I tried German, Russian, and Japanese.

**German.**

It was rather my daughter, who tried to let GPT-3 write a fairy tale. She began with *“Eine Katze mit Flügeln ging im Park spazieren”* (“A cat with wings took a walk in a park”).



Playground



Load a preset...



Eine Katze mit Flügeln ging im Park spazieren. Es war ein seltsamer Anblick. Sie war vollkommen weiß und trug ein kleines Tuch in den Farben des Feuerclans um ihren Hals. Sie trug es mit Würde und Stolz, auch wenn es ein wenig derangiert wirkte.

Der grüne Kater war verwirrt, er hatte noch nie so ein Tier gesehen.

Als er die Katze auf sich zukommen sah, war er erst auf der Hut. Einzelne, kleine Leute gab es viele. Aber eine Katze mit Flügeln, noch dazu eine weiße, war etwas

SUBMIT →



Here is the full text.

The emerged story was astonishingly well written. With irony, vivid characters, and some leitmotifs. This is not just a collection of topoi or connected sentences. This is... a story!

**Russian.**



The full text is here.

I trained once GPT-2 on Pushkin's poetry and have got some interesting

neologisms, but it was a grammar mess. Here I input some lines of Pushkin's poem — and the result I've got was... interesting. It hadn't rhymes, but stylistically intense power. It was not Pushkin style, though. But almost without any mistakes or weird grammar. And... it works as poetry (especially if you are ready to interpret it).

## Japanese.



Full text [here](#).

This was something special. I entered just a random sentence:

今日は楽しい一日になりますように! と言いました。// Today was funny and entertaining day, I said.

And the result was a small story about prayer, happiness, wisdom, and

financial investment. In well written Japanese (neutral politeness form, like the input).

**It does mean:** GPT-3 is ready for multilingual text processing.

## **Various experiments (and alerting signals).**

### **ShakespAlre and writing poems**

My first try was, of course, to write a Shakespearean sonnet. So the prompt was just:

```
here is a poem by Shakespeare
```

The result was this:

Perfect iambic verse, great style, nice rhymes... If not one thing:

The first two lines are actually from **Alexander Pope, The Rape of the Lock**. And here we have a reason to be cautious: GPT-3 produces unique and unrepeatable texts, but **it can reuse the whole quotes of existing texts it was trained on.**

Re-examination of results is inevitable if you want to guarantee a singularity of a text.

*I wonder, if there are some possibilities for “Projection” like StyleGAN2 feature, just in opposite to StyleGAN2 (where it compares the image with latent space), in GPT-3 it would compare with the dataset it was trained on? To prevent accidental plagiarism.*

But the thing is: GPT-3 can write poems on demand, in particular styles.

Here is another example:

## **Essays**

As I still hadn't accessed, I asked a friend to let GPT-3 write an essay on Kurt Schwitters, a German artist, and Dadaist:

The outcome is: GPT-3 has already a rich knowledge, which can be recollected. It is not always reliable (you have to fine-tune it to have a perfect meaning match), but it's still very close to the discourse.

## **Coding with GPT-3**

Another mindblowing possibility is using GPT-3 is quite different cases than just text generation:



You can get support by CSS:

And calling it General Intelligence is already a thing:

## Summary.

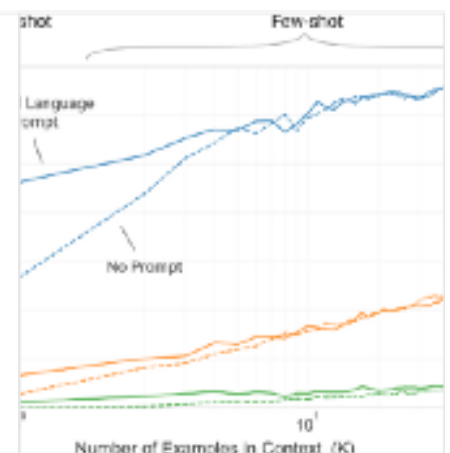
We are still at the beginning, but the experiments with GPT-3 made by the AI community show its power, potential, and impact. We just have to use it with reason and good intention. But that's the human factor. Which is not always the best one.

For more wonderful text experiments I highly recommend you to read Gwern:

### GPT-3 Creative Fiction

I continue my AI poetry generation experiments with OpenAI's 2020 GPT-3, which is 116× larger, and much more powerful...

[www.gwern.net](http://www.gwern.net)



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WRITTEN BY

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A Medium publication sharing concepts, ideas, and codes.

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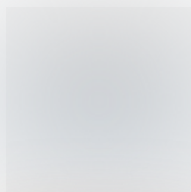
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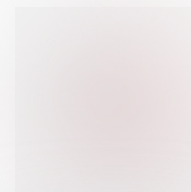
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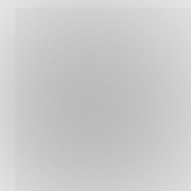
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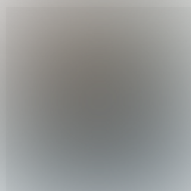
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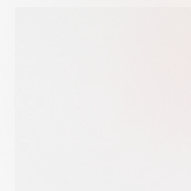
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