

- openHPI: ChatGPT: Was bedeutet generative KI für unsere Gesellschaft? -

Finetuning von Modellen

Johannes Hötter
Christian Warmuth

Warum ist Finetuning wichtig?

“Ich hatte am gestrigen Abend einen Unfall mit meinem Auto. [...] Können Sie mir weiterhelfen?”

**Prognose
vortrainiertes
Modell**

negativ

**Prognose
finetuned
Modell**

neutral

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Warum ist Finetuning wichtig?

“Mit welcher Art von Finanzinstrument gewährt man zum Beispiel dem Staat einen Kredit?”

**Prognose
vortrainiertes
Modell**

Aktie

**Prognose
finetuned
Modell**

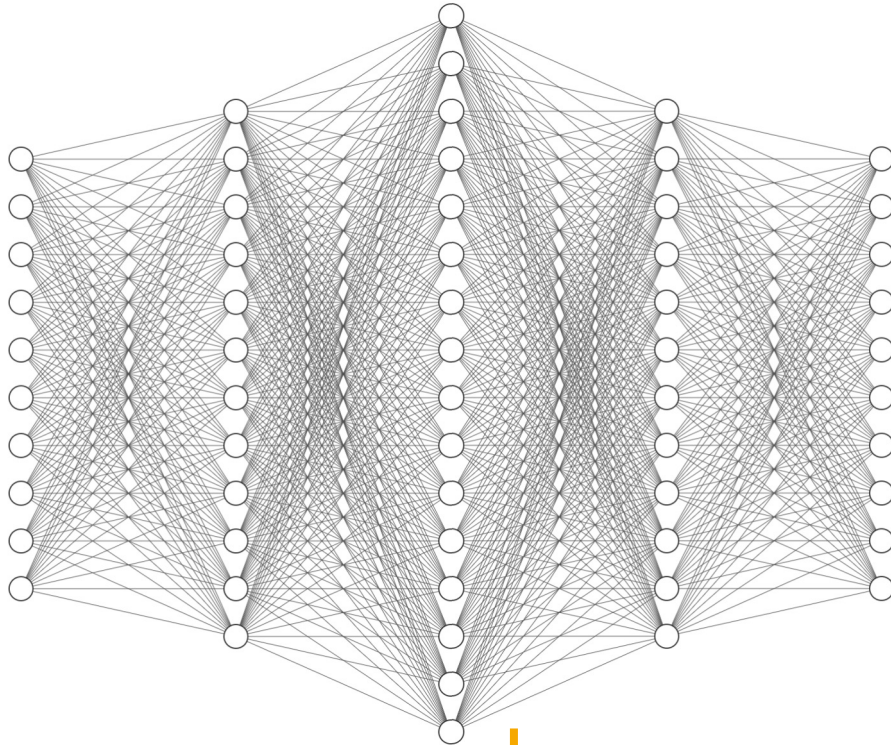
Anleihe

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Unterschied zum Prompting



Langfristige Veränderung des Modells

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Beispiel für Klassifikationen

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Case study: Sentiment analysis

Let's say you'd like to get a degree to which a particular tweet is positive or negative. The dataset might look something like the following:

```
{ "prompt": "Overjoyed with the new iPhone! ->", "completion": " positive" }  
{ "prompt": "@lakers disappoint for a third straight night https://t.co/38FEe43 -> ",
```

Once the model is fine-tuned, you can get back the log probabilities for the first completion token by setting `logprobs=2` on the completion request. The higher the probability for positive class, the higher the relative sentiment.

Now we can query our model by making a Completion request.

```
1 curl https://api.openai.com/v1/completions \  
2 -H "Content-Type: application/json" \  
3 -H "Authorization: Bearer $OPENAI_API_KEY" \  
4 -d '{  
5   "prompt": "https://t.co/f93xE2 Excited to share my latest blog post! ->",  
6   "max_tokens": 1,  
7   "model": "YOUR_FINE_TUNED_MODEL_NAME"  
8 }'
```

Which will return:

```
1 {  
2   "id": "cpl-COMPLETION_ID",  
3   "object": "text_completion",  
4   "created": 1589498378,
```

Disclaimer: OpenAI
ist hier als Beispiel
genannt, es gibt
noch viele weitere
Optionen (siehe
nächste Woche zu
Open-Source)

Beispiel für Klassifikationen

Text	Contains PII?
My name is John Smith.	True
I live at 123 Main St.	True
You can contact me at john.smith@email.com.	True
My favorite color is blue.	False
I was born on January 1, 1990.	True
My social security number is 123-45-6789.	True
I work at Acme Corporation.	False
My phone number is (555) 123-4567.	True
My credit card number is 1234-5678-9012-3456.	True
I graduated from Harvard University in 2012.	False


Je nach Modell welches eingesetzt wird, kann das Datenformat einfach programmatisch angepasst werden.

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Beispiel für Textbearbeitung

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```
2. Lions are ferocious animals.
3. Dolphins are playful animals.
4. Horses are majestic animals.
```

Editing text Alpha



The `edits` endpoint can be used to edit text, rather than just completing it. You provide some text and an instruction for how to modify it, and the `text-davinci-edit-001` model will attempt to edit it accordingly. This is a natural interface for translating, editing, and tweaking text. This is also useful for refactoring and working with code. Visit our [code guide](#) to learn more. During this initial beta period, usage of the edits endpoint is free.

Examples

INPUT	OUTPUT
GPT-3 is a very nice AI That's pretty good at writing replies When it's asked a question It gives its suggestion This is a poem it made that rhymes	<i>I</i> am a very nice AI <i>I</i> am pretty good at writing replies When <i>I</i> am asked a question <i>I</i> give my suggestion This is a poem <i>I</i> made that rhymes

INSTRUCTIONS

Make this in the voice of GPT-3

Was this page useful?  

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Beispiel für RLHF

(Reinforcement Learning with Human Feedback)

Question	Option 1	Option 2	Option 3	Best Fit
What is the capital of France?	Paris	London	New York City	1
What is the best way to the airport?	Take the train	Drive	Walk	1
Which phone should I buy?	iPhone	That depends.	Nokia	2
What should I wear to a wedding?	A suit or formal dress	Jeans and t-shirt	Swimwear	1
How can I better my programming?	Take a nap	Watch TV all day	Practice regularly	3

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Beispiel für Extraktionen



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Case study: Entity extraction

This is similar to a language transformation task. To improve the performance, it is best to either sort different extracted entities alphabetically or in the same order as they appear in the original text. This will help the model to keep track of all the entities which need to be generated in order. The dataset could look as follows:

```
{"prompt": "<any text, for example news article>\n\n###\n\n", "completion": "<any text, for example news article>\n\n###\n\n"}
```

For example:

```
{"prompt": "Portugal will be removed from the UK's green travel list from Tues", "completion": "Portugal will be removed from the UK's green travel list from Tuesday, 12th June 2023."}
```

A multi-line separator works best, as the text will likely contain multiple lines. Ideally there will be a high diversity of the types of input prompts (news articles, Wikipedia pages, tweets, legal documents), which reflect the likely texts which will be encountered when extracting entities.



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Beispiel für Extraktionen



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```
title>\n\n###\n\n", "completion": " <list of entities, separated by a newline> [
```

For example:

```
s...\n\n###\n\n", "completion": " Portugal\nUK\nNepal mutation\nIndian variant [
```

A multi-line separator works best, as the text will likely contain multiple lines. Ideally there will be a high diversity of the types of input prompts (news articles, Wikipedia pages, tweets, legal documents), which reflect the likely texts which will be encountered when extracting entities.

GEFÖRDERT VOM



Bundesministerium
für Bildung
und Forschung

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Beispiel für Extraktionen

Text	PII Type	Start Position	End Position
My name is John Smith and my email is john.smith@email.com.	Name, Email	11	48
I live at 123 Main St, Anytown, USA.	Address	10	27
My phone number is (555) 123-4567.	Phone Number	19	32
My social security number is 123-45-6789.	Social Security Number	27	39
My credit card number is 1234-5678-9012-3456.	Credit Card Number	24	43
I was born on January 1, 1990.	Date of Birth	14	28
My passport number is ABC123456.	Passport Number	22	30
My driver's license number is A123-456-789-0.	Driver's License Number	26	43
I work at Acme Corporation.	None	-	-
My favourite colour is blue.	None	-	-

Je nach Modell welches eingesetzt wird, kann das Datenformat einfach programmatisch angepasst werden.

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