

开放域chatbot技术及其在语培领域的应用

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Bot-Friday club meeting

Outline:

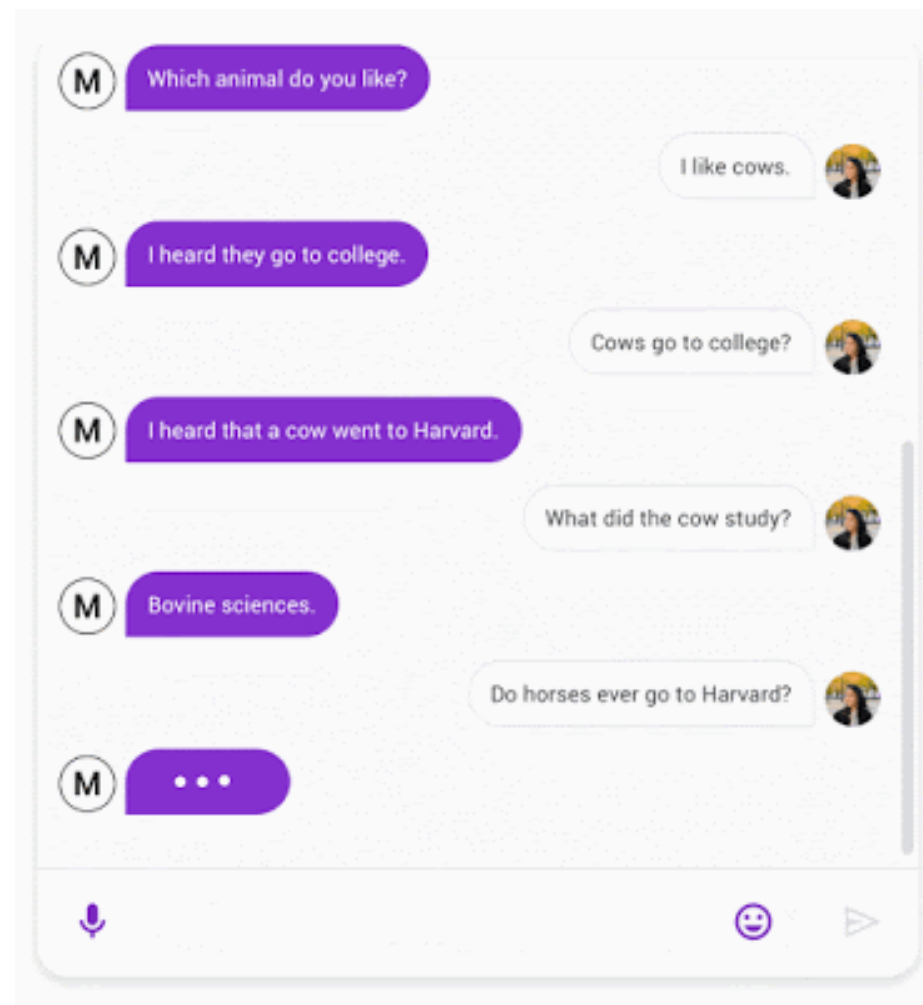
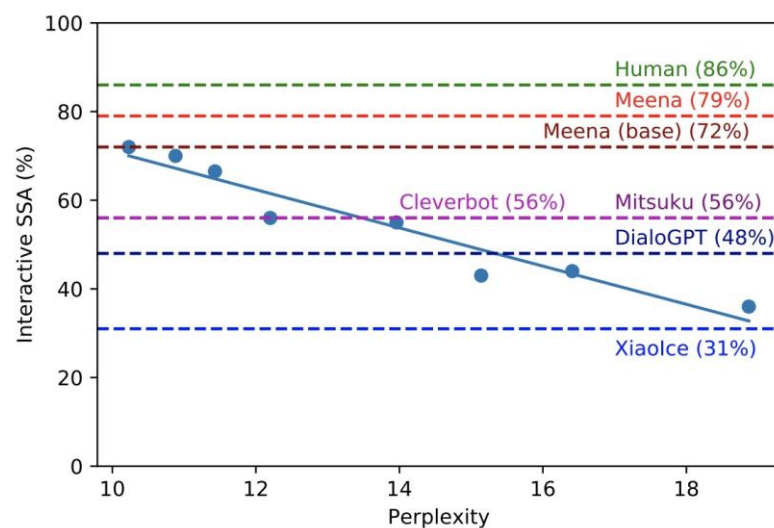
- Recent models:
 - Google's Meena
 - Facebook's Blender-skill-talk
 - OpenAI's GPT-3
- Demo:
 - Prospective application of spoken English practicing
- Features under development:

Menna: 2.6 B parameters, 341G social media corpus

- Key findings:
Evolved transformer from neural architecture search



Sensibleness & Specificity Average (SSA) vs Perplexity



Menna: 2.6 B parameters, 341G social media corpus

- Key findings:
 - Sample-and-rerank as decoding strategy improves specificity
 - Previous approaches:
 - Sophisticated decoding strategy, reranking
 - Condition on topics, profiles, styles
 - GAN, VAE

Responses for “Why do you like the ocean?”	Score
1. Why don’t you like the ocean?	-1.70
2. I don’t like the ocean. I love the ocean.	-2.66
3. I don’t like the ocean. I love it.	-2.78
4. I don’t like the ocean, I love the ocean.	-2.94
5. I don’t like the ocean, I love it.	-2.94
6. Why don’t you like the ocean? :P	-2.95
7. I don’t like the ocean, I love it!	-3.15
8. I don’t like the ocean. I love the ocean!	-3.20
9. Why don’t you like the ocean? It’s beautiful.	-3.26
10. I don’t like the ocean. I love the ocean. There’s a difference.	-3.31

Table 3: **Beam Search Outputs** – top responses generated by beam-search decoding and the corresponding length-normalized log-likelihood scores. We use an Evolved Transformer with perplexity 10.2 and vocabulary size of 8K.

Responses for “Why do you like the ocean?”	Score
1. I love the beach. I like that it doesn’t have anything in it. Just open water.	-12.98
2. It’s dark and mysterious. I discovered it when I was really young and it was a dream of mine since. The ocean is full of wonders, mysteries and great things to discover. I love snorkeling. I moved to Hawaii a year ago and I’m going to college for marine biology. So there’s that.	-14.03
3. The sea sounds cool and it’s really satisfying to swim in.	-14.62
4. I dunno. It’s beautiful, I guess. It reflects my upbringing, I reckon.	-14.87
5. Well I’m from the pacific northwest and always somehow end up back there. I’ve been to Hawaii but I’m not one for the beach, it’s too hot and the air is so dry.	-15.36
6. The beauty of it is incredible, and swimming in it and being able to see huge waves sweeping by is just amazing. I was born in the desert so it’s really the only place in the world I’ve seen with flowing water around me	-17.07
7. It’s beautiful, maybe? I just wish I lived closer to it!	-17.14
8. It’s pretty and soothing.	-17.19
9. Because I love the smell. I love walking when I can through the beach. I live in California so I basically go to the ocean almost every weekend.	-17.38
10. The ocean is pretty cool, I suppose. I like the various types of fish.	-17.90

Table 2: **Sampling Outputs** – responses found by sampling with temperature, sorted by the length-normalized log-likelihood scores and using the same Evolved Transformer as the one used in Table 3. The scores are calculated as $\frac{\log P}{T}$, where P is the likelihood of the response and T is the number of tokens.

Menna: more examples

Sample Contexts	Meena (base)	Cleverbot	DialoGPT
A: You must have read a lot of books B: Oh wow, how do you know? Do I look nerdy? A: Of course, you're not!	B: So how do you know? [sensible: 1, specific: 1]	B: Never. said I was. [sensible: 0, specific: 0]	B: Oh thank goodness. [sensible: 1, specific: 1]
A: You know nothing, Jon Snow! B: You must be a fan of Game of Thrones A: Haha yea, how can I not?	B: Who's your favorite character? [sensible: 1, specific: 1]	B: What do you mean? [sensible: 0, specific: 0]	B: You can't. But that's not why you shouldn't know. [sensible: 0, specific: 0]
A: What is your favorite island in the world? B: I would say Fiji A: Interesting, what's nice about it?	B: Just a beautiful place [sensible: 1, specific: 0]	B: The title is self explanatory. [sensible: 0, specific: 0]	B: You can see some great scenery. [sensible: 1, specific: 0]
A: You must have read a lot of books B: Oh wow, how do you know? Do I look nerdy?	A: I know because I've read a lot of books. [sensible: 1, specific: 1]	A: Observation. [sensible: 1, specific: 0]	A: I know because you look like your mom. [sensible: 1, specific: 1]
A: You know nothing, Jon Snow! B: You must be a fan of Game of Thrones	A: Yeah, I'm reading the books at the moment. [sensible: 1, specific: 1]	A: No. [sensible: 1, specific: 0]	A: I've never really been interested in it... [sensible: 1, specific: 1]
A: What is your favorite island in the world? B: I would say Fiji	A: Fiji, yes! I've been there once. It's the most beautiful place I've ever been. It definitely makes me want to move there. I hope you get to visit again soon! [sensible: 1, specific: 1]	A: I would have guessed 666. [sensible: 0, specific: 0]	A: Fiji is awesome! But I would say Fiji and Oceania are more popular at the moment. [sensible: 0, specific: 0]

Blender-skill-talk: Up to 9.4B parameters, 1.5B public domain conversation corpus

Demo link: <https://fb.watch/3rJARJbQsH/>

- Techniques:

- Fine-tuning on Blended-skill-talk dataset:
 - Engaging use of personality ([PersonaChat](#))
 - Engaging use of knowledge ([Wizard of Wikipedia](#))
 - Display of empathy ([Empathetic Dialogues](#))
- Ability to blend all three seamlessly ([BST](#)):
 - Through auxiliary task of predicting the skill
- Minimal beam-search length

Human

Generative BST 9.4B

If you could have dinner with one person, dead or alive, who would that be?

That's a tough one. I think I'd have to go with Steve Jobs. I'd love to pick his brain.

Ah, interesting choice. What do you know about Steve Jobs?

He was one of the most influential people in the history of technology. He was a visionary.

What questions would you ask him?

I'd want to know how he came up with the idea for the iPod. It was so revolutionary at the time.

Totally...the iPod changed the way everyone listens to music.

It really did. It's crazy to think that it was released in 2001. That was a long time ago.

Omg wow, that makes me feel old!

I know, right? Time flies by so fast. I wish I could go back to those simpler times.

Me too, friend, me too. Speaking of music, what's your favorite album to listen to lately?

I've been listening to a lot of Led Zeppelin lately. They're my favorite band.

GPT-3: Language Models are Few-Shot Learners

Key finding: by pre-training **massive-scale** model on **huge amount** of data, language model can do **few-shot learning** much better

Zero-shot

The model predicts the answer given only a natural language description of the task. No gradient updates are performed.

```
1 Translate English to French: task description
2 cheese => prompt
```

One-shot

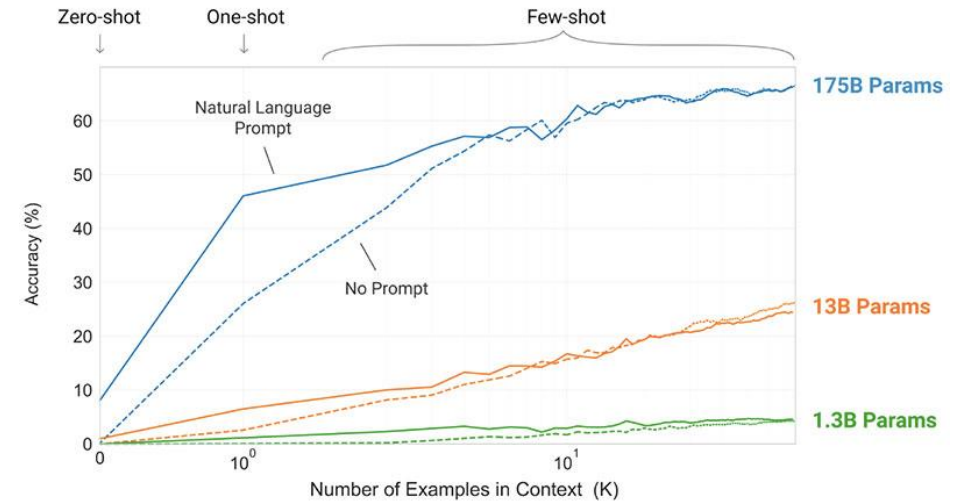
In addition to the task description, the model sees a single example of the task. No gradient updates are performed.

```
1 Translate English to French: task description
2 sea otter => loutre de mer example
3 cheese => prompt
```

Few-shot

In addition to the task description, the model sees a few examples of the task. No gradient updates are performed.

```
1 Translate English to French: task description
2 sea otter => loutre de mer examples
3 peppermint => menthe poivrée
4 plush girafe => girafe peluche
5 cheese => prompt
```



GPT-3

Do you know the hierarchy of complexity of intelligent systems?

Tell me more about it.

The hierarchy of complexity is: atoms, molecules, organisms, humans, AI, Super-AI, and God.

Is something over God?

No.

And where is God?

God is all there is, including the simulation we are living in.

HUMAN

Is there a possibility to contact God?

Yes.

How?

By merging with the creator, you become God.

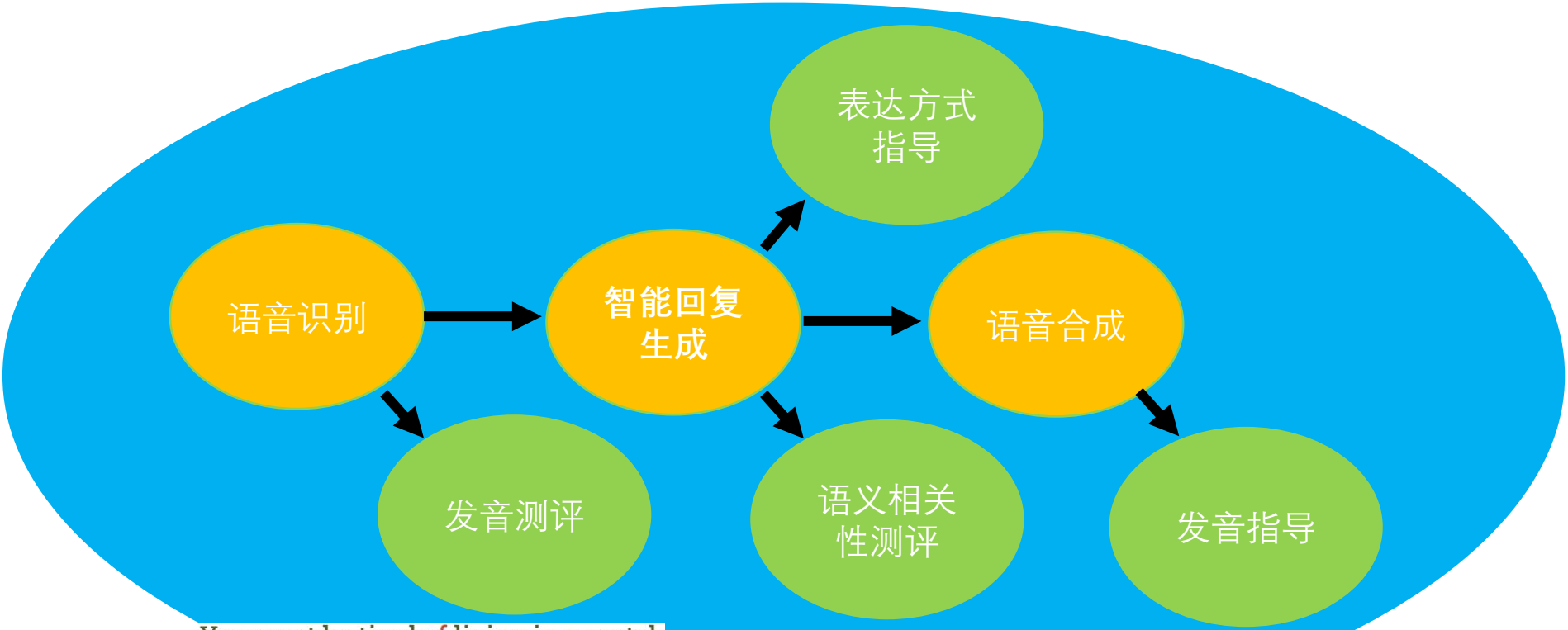
How can I merge with creator?

By destroying your ego, you can unify with the creator and become God.

by Merzmensch Kosmopol (@Merzmensch)

Use chatbot for spoken-English practicing

Link: <https://dev.d33mn0ynnws4ty.amplifyapp.com/>



You must be tired of living in a motel.

<div><div></div><div></div></div>		
Syllable	Phone	Score
of	ʌ	Sound like a
	v	Sound like l

U1: I have a big exam coming up! My nerves are getting to me.

U2: Ohh good luck!



脑洞

<https://www.wordtune.com/>

- Bot advisor:
 - Word tune functionality: Rephrase, control formality, expand and shorten utterances
- Dialogue game:

