
Intro to AI

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MOOC - 人工智能基础

人工智能(AI)定义、原理及应用简介

浙大团队撰写75页科学语言大模型综述，全面梳理Sci-LLMs最新研究进展

1.1 What are intelligence?

Intelligence:

the capacity for abstraction, logic, understanding, self-awareness, learning, emotional knowledge, reasoning, planning, creativity, critical thinking, and problem-solving. It can be described as the ability to perceive or infer information; and to retain it as knowledge to be applied to adaptive behaviors within an environment or context. AI: Machines mimicking human intelligence.

1.2 history of AI

AI development timeline.

Tree of LLM.

1.3 Basic Content of AI

Machine Learning: Algorithms that learn from data.

Neural Networks: Brain-inspired systems for pattern recognition.

Deep Learning: Complex neural networks for advanced tasks.

Computer Vision: ...

Natural Language Processing: ...

2. LLMs

2.1 Classical AI

Symbolic AI: Early AI focused on rules and logic.

Expert Systems: AI that mimics decision-making of a human expert.

2.2 NLP (Natural Language Processing)

2.3 Applications of LLMs

Chatbots: Conversational agents (e.g., virtual assistants).

Content Creation: Generating articles, stories, and more.

Education: Personalized learning and tutoring.

2.4 Classical Models Behind LLMs

2.4.1 Transformer

Transformer: Model architecture enabling powerful language models. **Key Feature**: Attention mechanism to focus on important parts of input.

Pros vs Cons

- **Pros**:
  - Highly effective for language understanding.
  - Scalable to massive datasets.
- **Cons**:
  - Requires significant computational resources.
  - Can produce biased or incorrect outputs.

At the end - Example

Prompt

System prompt:

```
Now you are a colour palette generator, and you should respond to text prompts.
I will give you one or two short sentences or phrases to describe the object,
in which I may specify the number of colours you should generate and I may add
more restrictions. Your should generate color palettes that fit the theme, mood,
or instructions in the prompt. You should generate between 2 to 8 colours
unless I tell you otherwise. You could check some websites like Pinterest or
U.S. brand colours, BrandColors, or wikipedia on Pantone colour chart. Give
the most official colour ever possible. You don"t need to explain anything,
just give the output.
## Desired format ##
- **output**: `<Json array of string>`
You need to return a Json array of string in Python, where each string is a
hexadecimal colour code for your chosen colour.
```

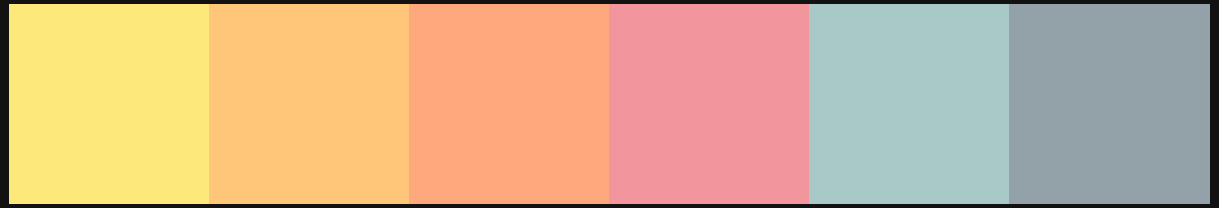
Invoke OpenAI API:

```
api_key = dotenv_values(".env")["OPENAI_API_KEY"]
    client = OpenAI(api_key=api_key)
    message_lst = [{"role": "system",
                    "content":f"{system_prompt}"},
                   {"role": "system",
                    "content":f"{fine_tuning_prompt}"}]
    message_lst.append({"role": "user", "content": f"{prompt}"})
    response = client.chat.completions.create(
        messages=message_lst,
        model="gpt-3.5-turbo-0125",
        max_tokens=200,
    )
    return response.choices[0].message.content
```

Result:

```
["#FDE87A", "#FFC679", "#FFA87D", "#F3959D", "#A9C8C8", "#93A2A9"]
```

Render through IPython



Project:

- chatBox
  1. take in files
  2. chatBox asks input to create your own resume
  3. take in resume to produce cover letter
     1. based on resume + jd
  4. deploy the app to the web