Human-AI Cooperation System

Personal Learning Path Advisor

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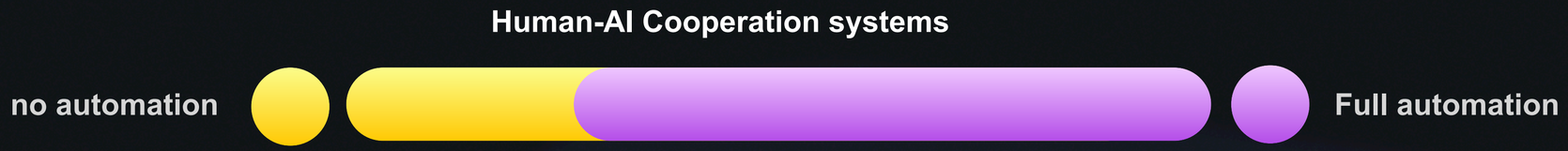
Human-AI Cooperation

The capabilities of artificial intelligence (AI) are continuously increasing. Humans can give a growing number of decision-making tasks to automated systems.



Q1:

How to evaluate?

Q2:

What role do humans play?

Q3:

How to design?

Not the accuracy of AI,But **decision quality of the entire Human-AI system**

The doctor and the CD recognition AI work together to diagnose the patient [1]

90% accuracy AI

VS

70% accuracy AI

Human's perceptions

Human's behaviours

[1] K. Goddard, A. Roudsari, and J. C. Wyatt, "Automation bias: a systematic review of frequency, effect mediators, and mitigators," J Am Med Inform Assoc, vol. 19, no. 1, pp. 121–127, Jan. 2012, doi: 10.1136/amiajnl-2011-000089.

When an AI system makes a bad decision, should the responsibility lie with the algorithm developer, the user, or the machine itself?

For cooperation system,

Human take the major responsibility!

Understanding

Trusting

Independent

Automation bias

Conformist

How to design such system? — a Minimum Viable Product (MVP)

Personal Learning Path Advisor (PLPA)

This role or tool is designed to guide learners through the complexities of online education, ensuring that they receive the most relevant and effective learning experience tailored to their needs.

Personalisation

A PLPA customizes learning experiences to match individual preferences, learning speeds, and interests, ensuring that learners engage with content that is most relevant and beneficial to their personal and professional goals.

Efficiency

The PLPA helps learners navigate the vast array of available courses, identifying and recommending the most effective learning paths.

Evaluate

Motivation and Engagement

Workflow

Current stage

1. Personalization Parameters
2. Technical Requirements
3. Course Platform

Requirement Gathering

1. Data Processing
2. Agent Prompt
3. Retrieval-Augmented Generation

Data collection, Agent design

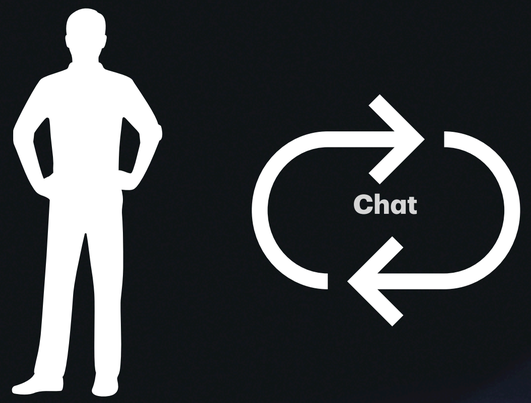
1. Agent integrating
2. User interface

Prototype Development

1. Real users test to gather feedback
2. Deployment

User Testing Iteration

Framework



Survey Agent

Understanding Your Goals: Share a bit about your educational background, interests, and career aspirations.

Recommend Agent

Based on the survey, design learning pathway that suits user needs.
providing: Course info, Reasons

Critic

summarise,
reflection
fact-checking
Feedback

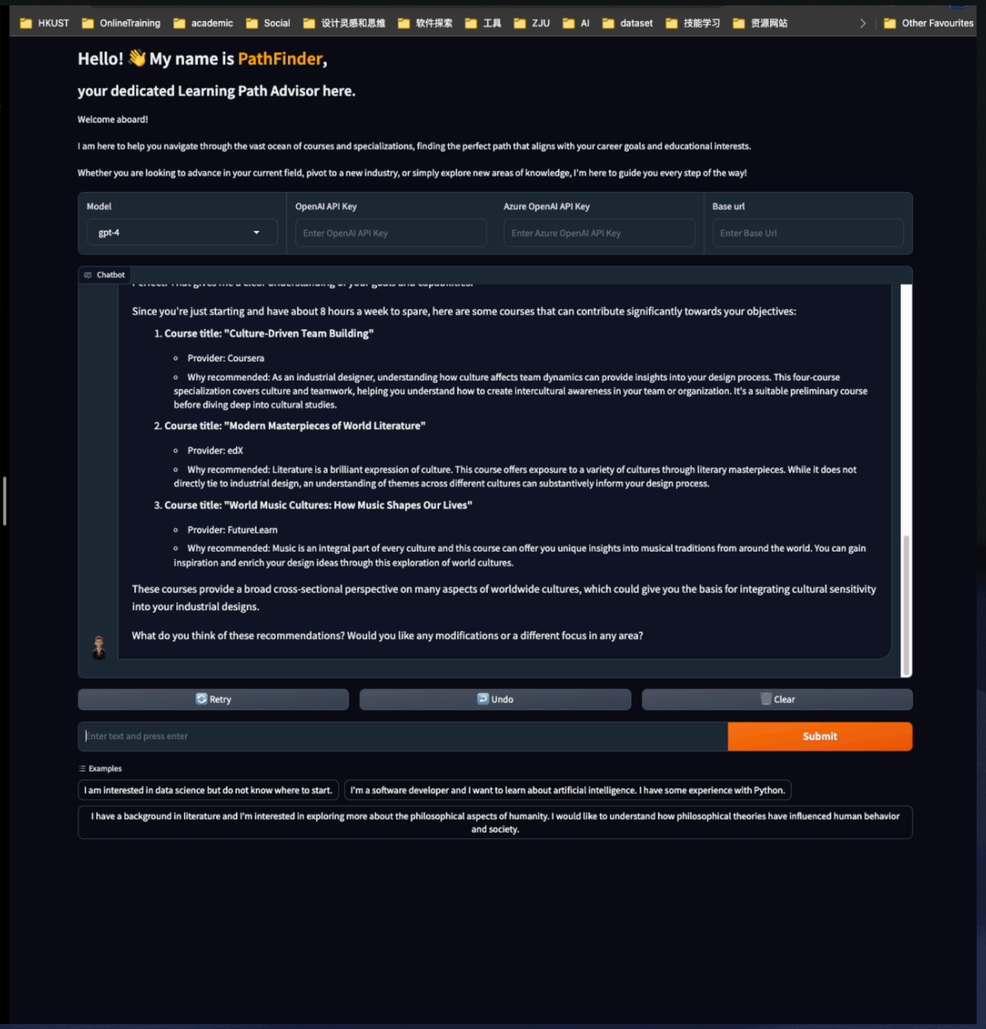
Retrieval-Augmented Agent

Fact-checking
similar research in narrow knowledge

Personal Learning Path Advisor Agent Group

Project Demo

User test link: path_advisor_user_test



Findings

Tech

- Observing machine behaviour made me reflect more on the nature of human thinking. (More advanced)

  Human: (Reasoning + Acting) ; LLM (Searching) —> (Reasoning) + (Acting) + (Observe)

- Information cocoon （hidden pattern in LLM）
  Narrow AI agent, Narrow AI knowledge -> info update

Humanity

- whether PLPAs empower learners by offering personalized choices or create a dependence that might limit their ability to self-direct their learning journey.

- how PLPAs might change the goals of education. Are they merely optimizing for efficiency and marketable skills, or do they also support broader educational values such as critical thinking, creativity, and personal growth?

- How does the integration of AI in learning environments shape our understanding of human learning?

- Do personalized paths lead to higher motivation, or could they possibly lead to an overload of choices that paralyze some learners?

Challenges

- The **token limit** has led to the finiteness of Agent's memory, a more advanced memory storage solution may be needed such as long-term and short-term memory.
- **Agents communicate** in a completely natural language format, enhancing the model's transparency and understandability. However, this also results in higher operating costs and hinders large-scale deployment.
- A lot of **assumptions and biases**, need more **user test** or survey to ensure the user need.
- **evaluate or observe** the impact

Further Enhancement