



JOHNS HOPKINS
CAREY BUSINESS SCHOOL

Collaborating with and Building AI Agents

Research Data Alliance

Nov 11, 2025

Harang Ju

Research

arXiv:2503.18238 (cs)

[Submitted on 23 Mar 2025 ([v1](#)), last revised 15 Aug 2025 (this version, v2)]

Collaborating with AI Agents: Field Experiments on Teamwork, Productivity, and Performance

[Harang Ju](#), [Sinan Aral](#)

Personality Pairing Improves Human-AI Collaboration

Harang Ju^a and Sinan Aral^b

Personality Pairing Alleviates the AI Gender Gap

Harang Ju¹, Sinan Aral^{2†}

Internal Agents

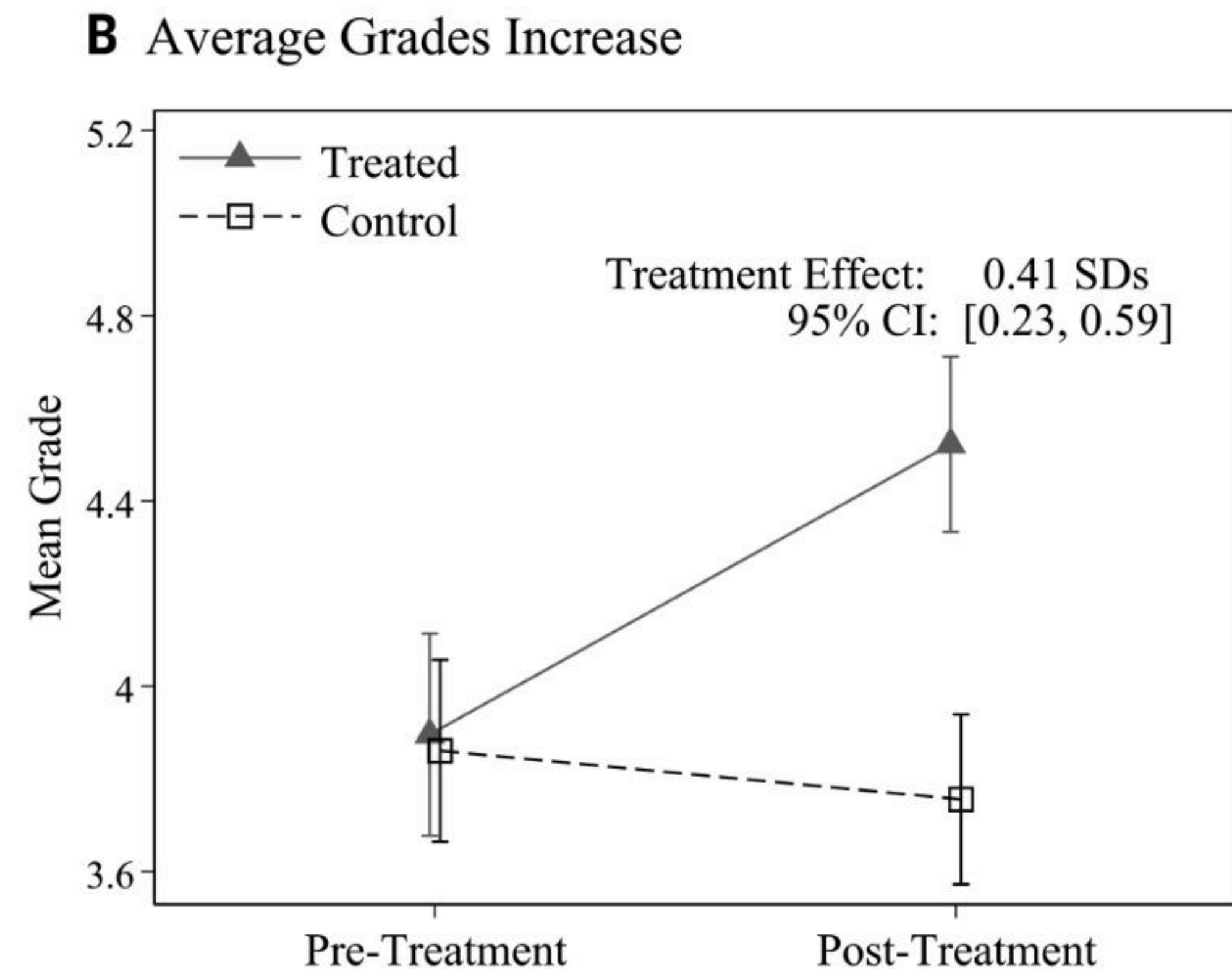
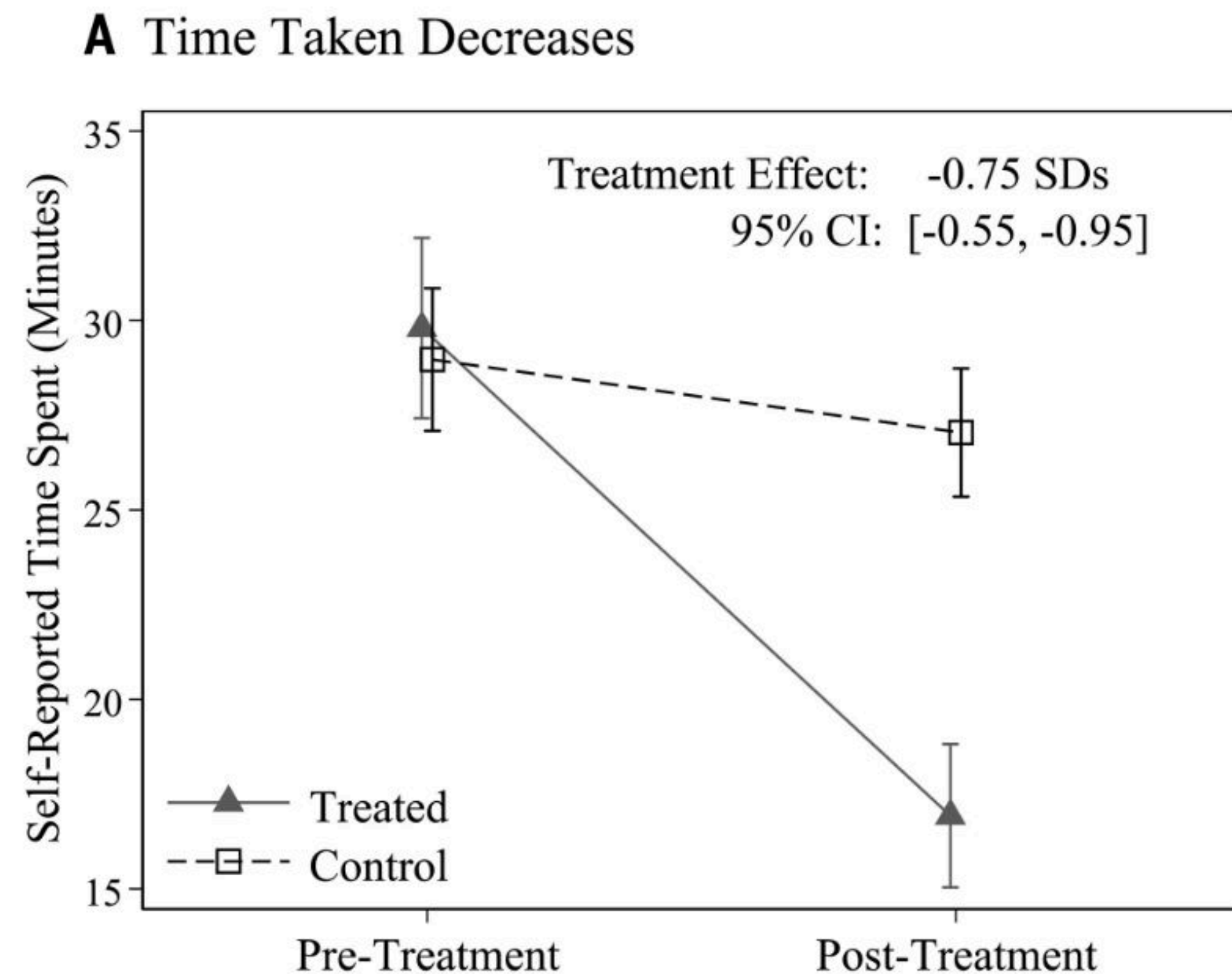
AI Agent Lab at Johns Hopkins

AI Startup

Pairium AI

AI personalization that makes you better

Productivity boost from chatbots



But what about *AI* agents?

Pairit

- ~2,300 participants
- ~180,000 chat messages
- ~11,000 ads created
- ~1,900,000 edits (keystrokes)

Time 00:50 Submissions 0 Help

Quit

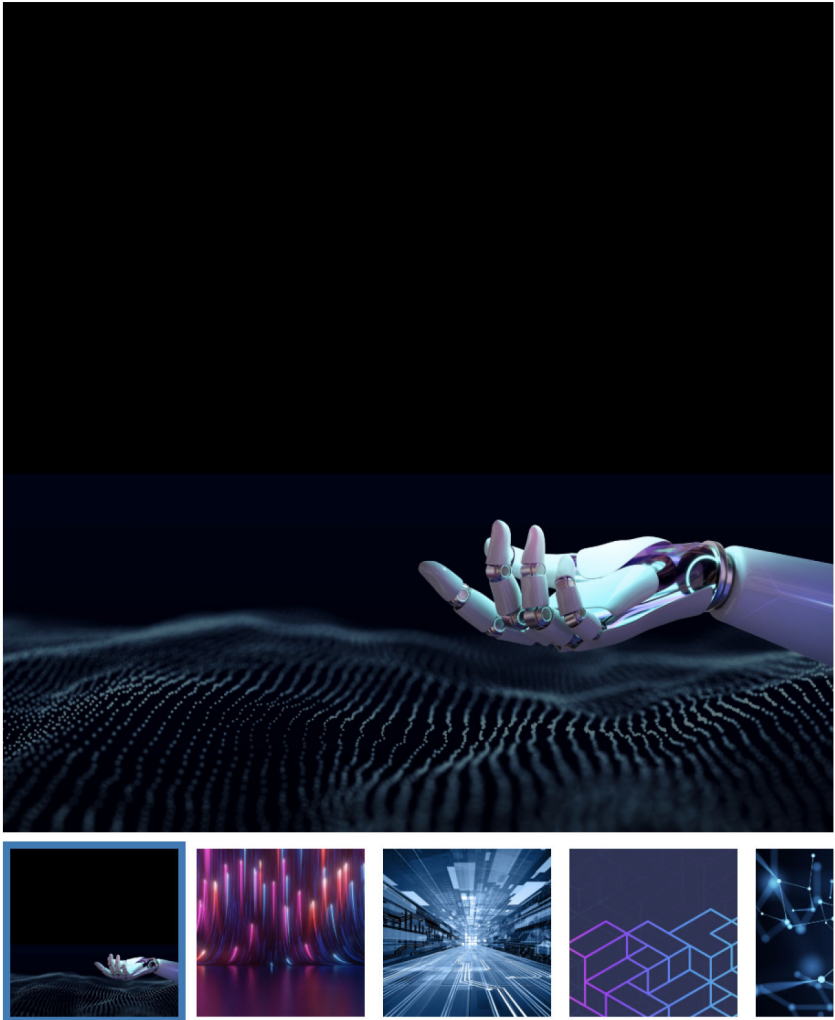
Work with your partner to create a display ad for the 2024 Annual Conference Report by

The Annual Report is about the research and activities in 2024. The ad will be displayed on social media platforms. The ad should be engaging and informative, and it should encourage people to read the report.

You have 40 minutes to submit as many ideas as you can. You can submit your ideas at any time. When you are ready to submit, click the "Submit" button. Your partner can confirm the submission.

PRIZES: You will be entered into a draw for an additional \$100. Your chance of winning depends on the quality and the quantity of your ideas.

Image



Generate AI Image

Generate

Headline

Primary Text

Description

Submit

Chat Panel

hello!

hey!

ready to brainstorm some ideas for the conference ad?

any thoughts on where to start?

Send a message.

Human-human vs human-AI

- When collaborating with AI agents, people **delegate via chat instructions**.
- This **boosts productivity** and **text quality**, but **lowers image quality**.
- **Social/emotional** chat **hurts H-AI** performance but **helps H-H** teams; H-AI focuses on content/process.
- H-AI teams **lose output diversity** and **top-tier ads**; net field performance similar.



Interested in running human-AI experiments?



- Components
- Text

Button

Survey

Matchmaking

Chat

Agents

Workspace

Media

Form

Custom Components



```
initialPageId: intro
pages:
  - id: intro
    text: |
      Welcome. Please complete this short survey.
    buttons:
      - id: intro-start
        text: "Begin"
        action:
          type: go_to
          target: survey_1

  - id: survey_1
    text: "Pretend survey question"
    buttons:
      - id: survey-submit
        text: "Submit"
        action:
          type: go_to
          branches:
            - when: "$event.payload.choice == 'follow_up'"
              target: survey_follow_up
            - target: outro

  - id: survey_follow_up
    text: "Thanks for opting in to the follow-up."
    buttons:
      - id: follow_up_continue
        text: "Continue"
        action:
          type: go_to
          target: outro

  - id: outro
    end: true

user_state:
  choice: string
```



Time 00:50 Submissions 0 Help Quit

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Image

An AI-generated image showing a hand holding a glowing, textured sphere against a dark background.

Generate AI Image

Headline

Primary Text

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Submit

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Productivity boost from LLM apps

- Noy & Zhang, 2023
- Brynjolfsson et al., 2023
- Wiles et al., 2025
- Dell'acqua et al., 2023
- Otis et al., 2024
- Chen & Chan, 2024
- Krakowski et al., 2025
- Ju & Aral, 2025

A lot of heterogeneous effects...

- Noy & Zhang, 2023
 - ▶ skill
- Brynjolfsson et al., 2023
 - ▶ skill
- Wiles et al., 2025
 - ▶ language
- Dell'acqua et al., 2023
 - ▶ tasks, gender
- Otis et al., 2024
 - ▶ skill
- Chen & Chan, 2024
 - ▶ expertise
- Krakowski et al., 2025
 - ▶ cognitive styles
- Ju & Aral, 2025
 - ▶ tasks, gender

One-size-fits-all?

ChatGPT, Grok, Claude...

Personalization

Enable customization

Customize how ChatGPT responds to you. [Learn more](#)

Base style and tone

Set the style and tone ChatGPT uses when responding.

Default

Default

Cheerful and adaptive

Listener

Thoughtful and supportive

Robot

Efficient and blunt

Nerd

Exploratory and enthusiastic

Cynic

Critical and sarcastic

Custom instructions

Additional behavior, style, and tone

Chatty

Witty

Straight shooting

About you

Nickname

Customize Grok's Response

Custom

Responds to you as you please.

✓

Concise

Responds briefly and directly.

Formal

Responds using a formal tone.

Socratic

Responds in a way to help you learn.

Alignment

Claude's Character

Jun 8, 2024

AI

What should an AI's personality be?

Copy link

ANTHROPIC

What should an AI's personality be?

Personality prompts



Evaluating and Inducing Personality in Pre-trained Language Models

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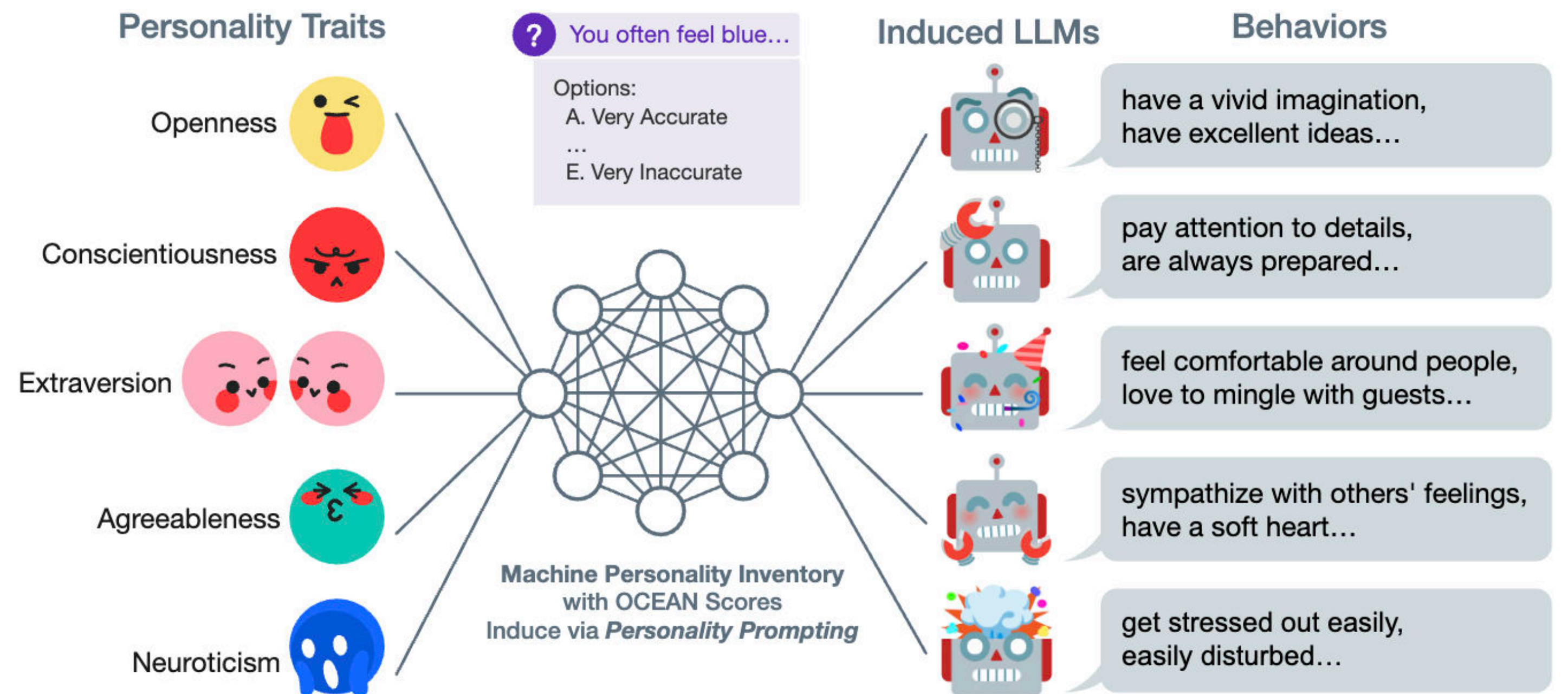
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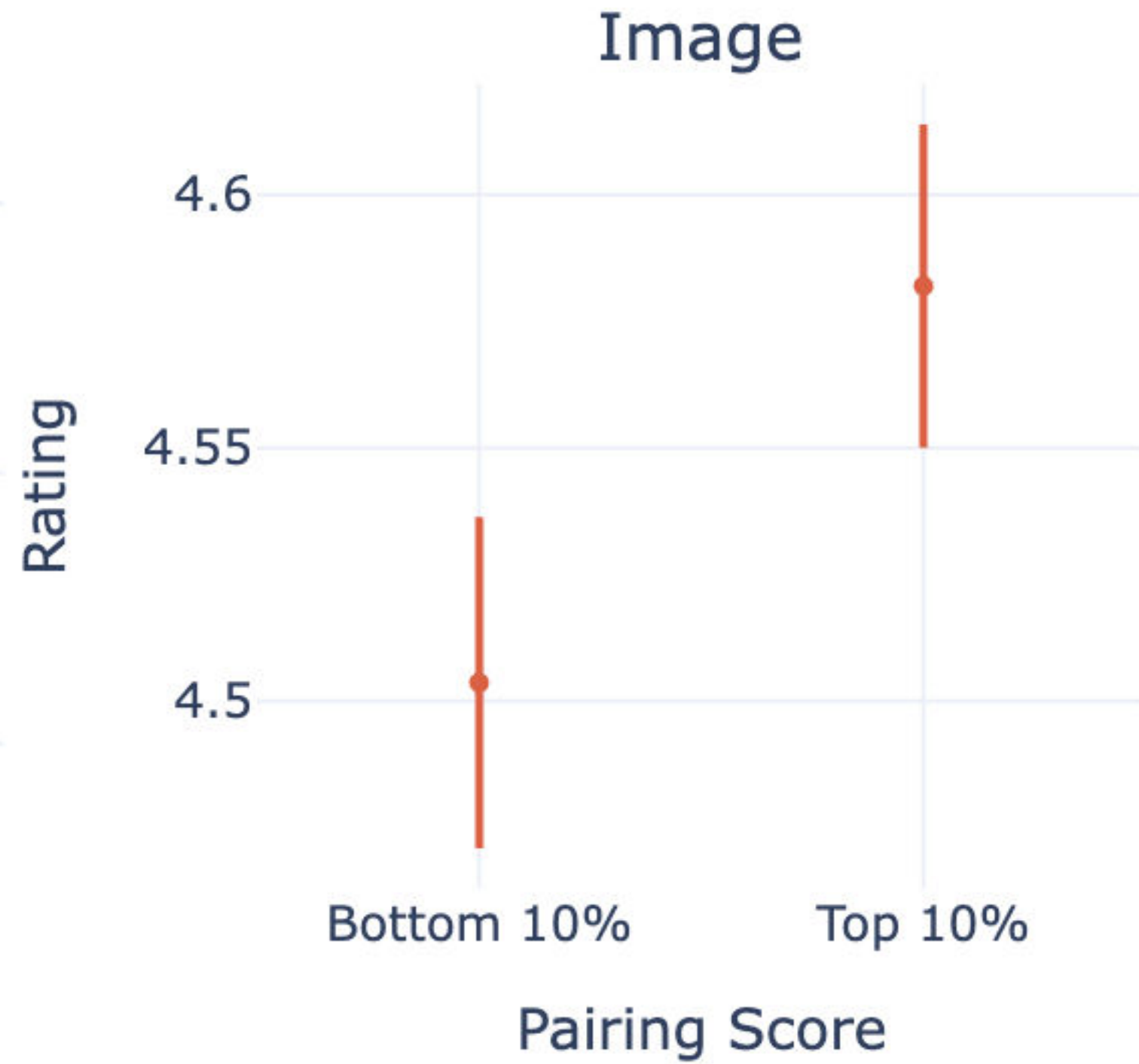
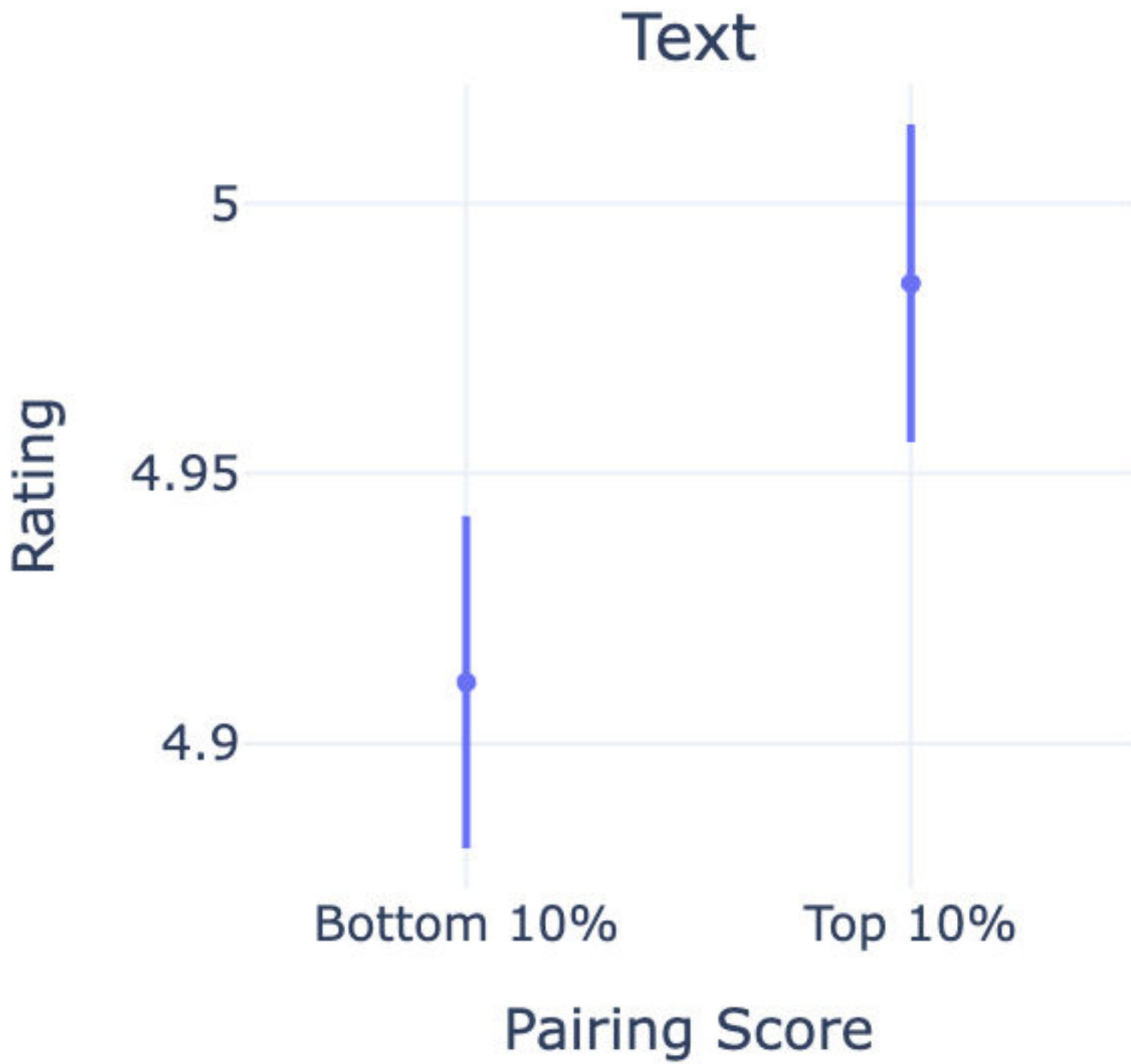
Yixin Zhu^{1,✉}
yixin.zhu@pku.edu.cn



Personality pairing matters



Best vs worst pairings



AI Agent Lab

1. AACSB Accreditation agent
2. Internal HR agent
3. Course proposal agent

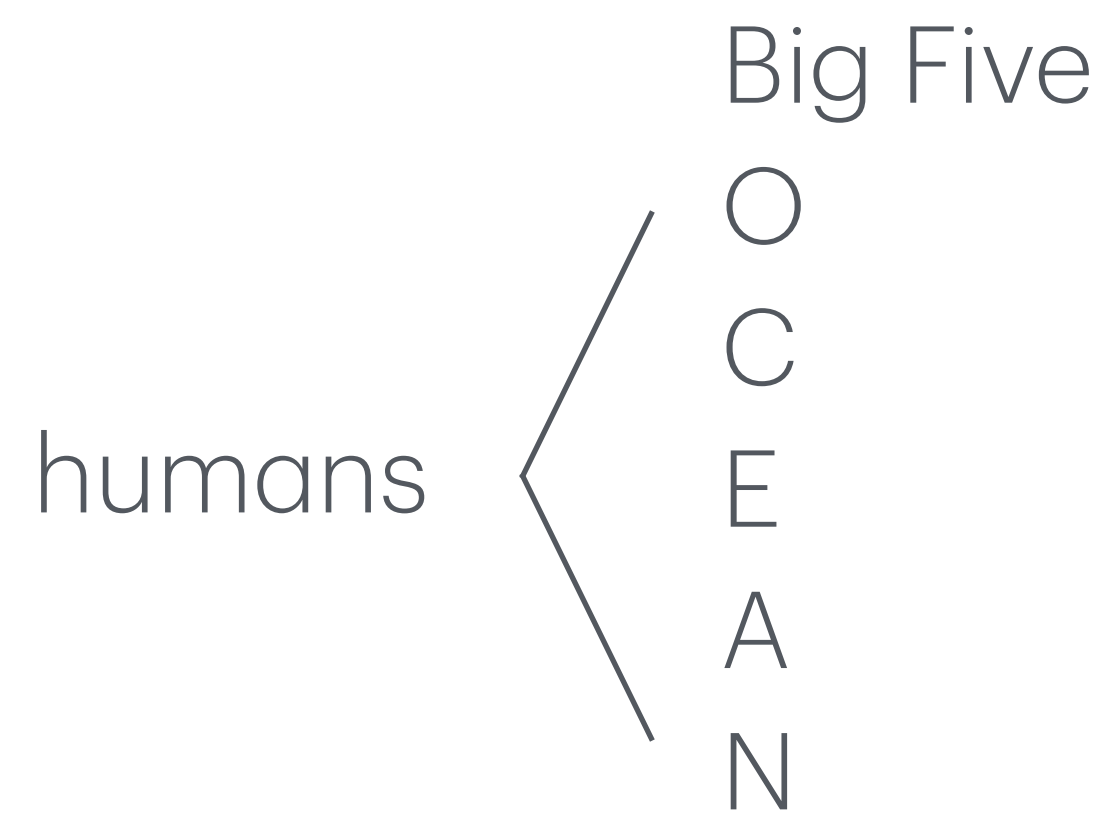


Pairium AI

AI personalization that makes you better

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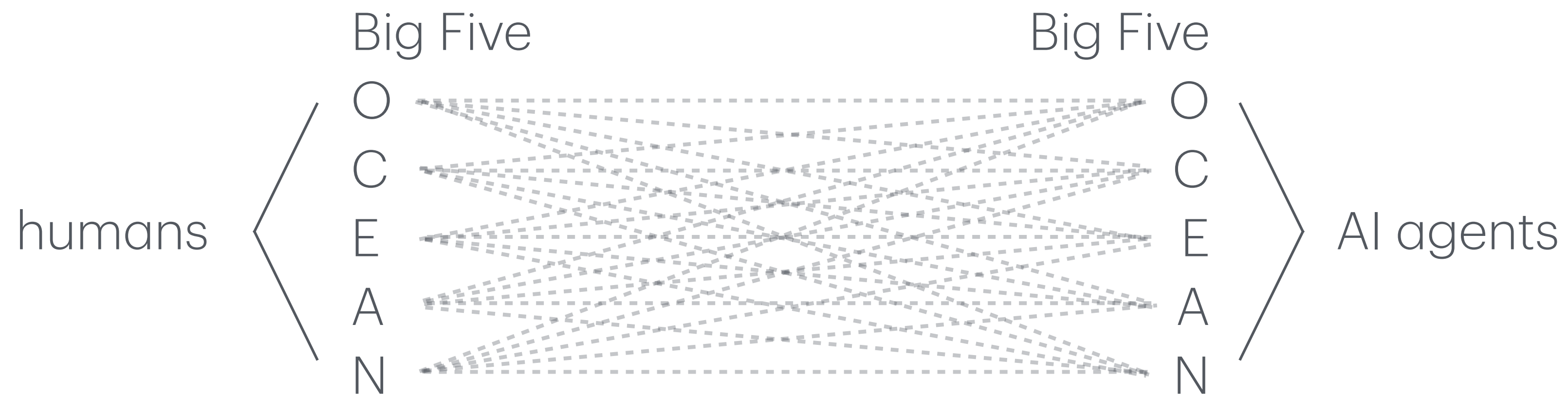
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Thank you

Any questions?

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