Applying AI Agents to Study the Team Collaboration Efficiency of Introvert and Extravert Personality

Mirror Squad
TEAM ID：380141

GPT 4.0 will be a game changer, on par with the iPhone's moment.

Andreas Braun, CTO of Microsoft Germany

THE RISE OF AI AGENTS

Smallville Overview

- According to "Science" and "Nature" LLM AI agents demonstrate remarkable performance in mimicking human personality traits and behavioral patterns.
- AI agent platforms are capable of simulating the complex dynamics of human socio-economic psychological and behavioral aspects.

Image source: from paper Generative Agents: Interactive Simulacra of Human Behavior

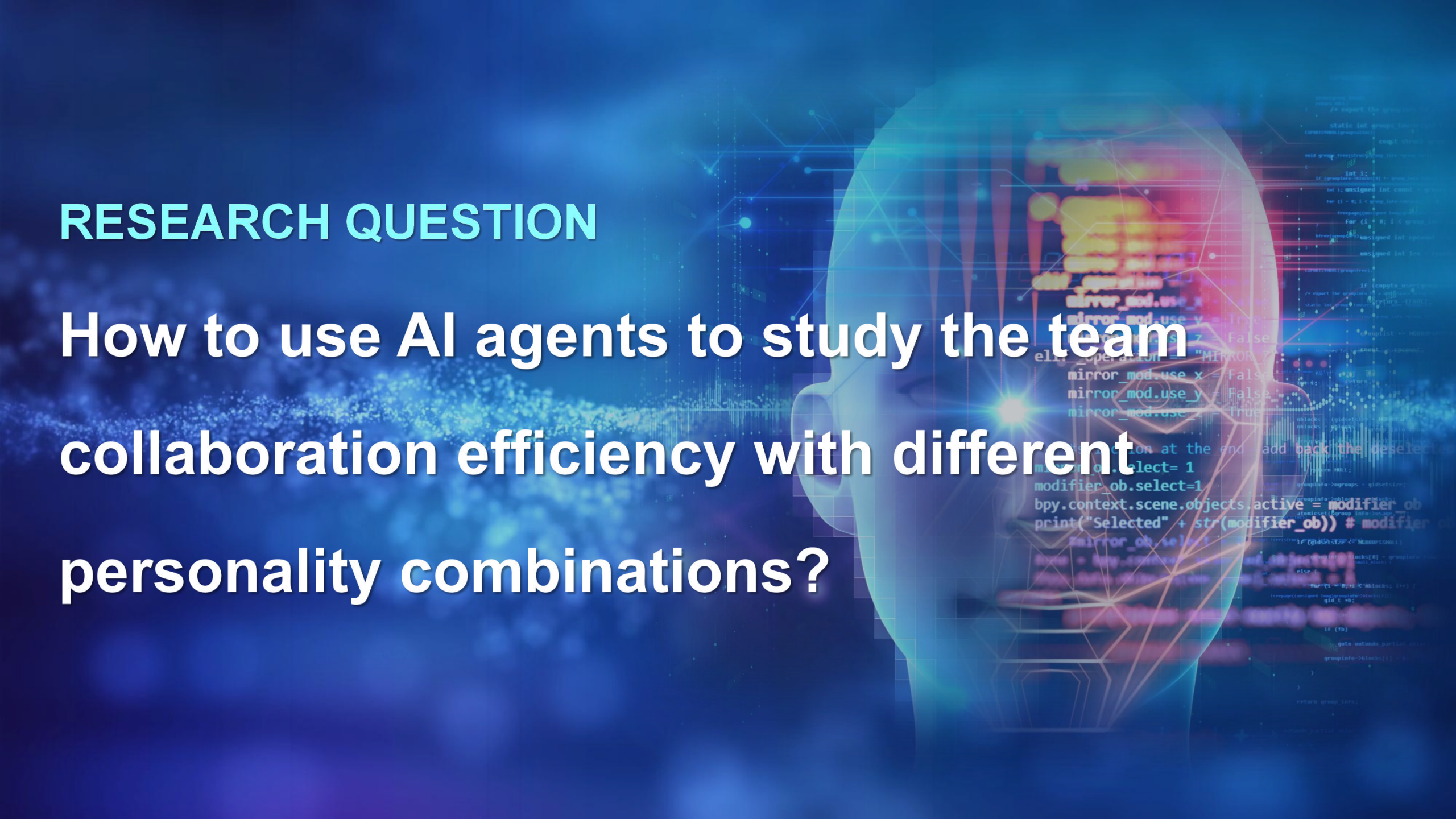
CHALLENGES

Human samples acquisition in social science research remains a challenge

- Difficulty in human sample acquisition
- High cost of discerning sample validity
- Ethical/safety concerns

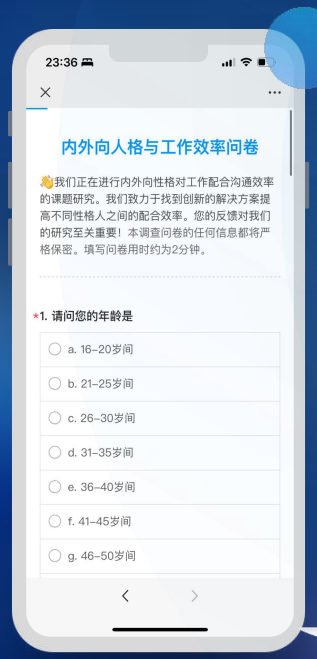
RESEARCH QUESTION

How to use AI agents to study the team collaboration efficiency with different personality combinations?



RESEARCH METHODOLOGY

- Literature review
- Qualitative interview
- Quantitative survey
- Quasi-Experimental design



EXISTING SOLUTION ANALYSIS

Traditional Social Science Research Methods

- **Survey and Observation Methods:** Challenges of sample representativeness & data accuracy
- **Human sample difficulties:** Difficult to find accurate human sample

Existing AI Agent Platforms/Simulators

- Too difficult to use by the social science researchers who do not have computer science background
- Lacking research outcomes with significant social and academic influence

RESEARCH FINDINGS & CONCLUSIONS

TARGET AUDIENCE

- Individuals seeking to improve teamwork efficiency
- Researchers of social sciences and the psychological domains

INNOVATION GOAL

- Provide customized guidance to improve team collaboration efficiency
- Other enriched the ticket for researchers in the social science psychology academic domains

AI agent simulation results closely mimic real human behaviour

Extroversion is a key dimension of the Big Five important for team collaboration

Team collaboration is ubiquitous yet urgent improvement is needed

There is a lack of tools on the market that can guide and enhance team collaboration with an interactive way that individuals can use anytime they need

FEEDBACK FROM QUESTIONNAIRE

95%

frequently engage in team collaboration at work

67%

believe that their team collaboration efficiency needs to be improved urgently

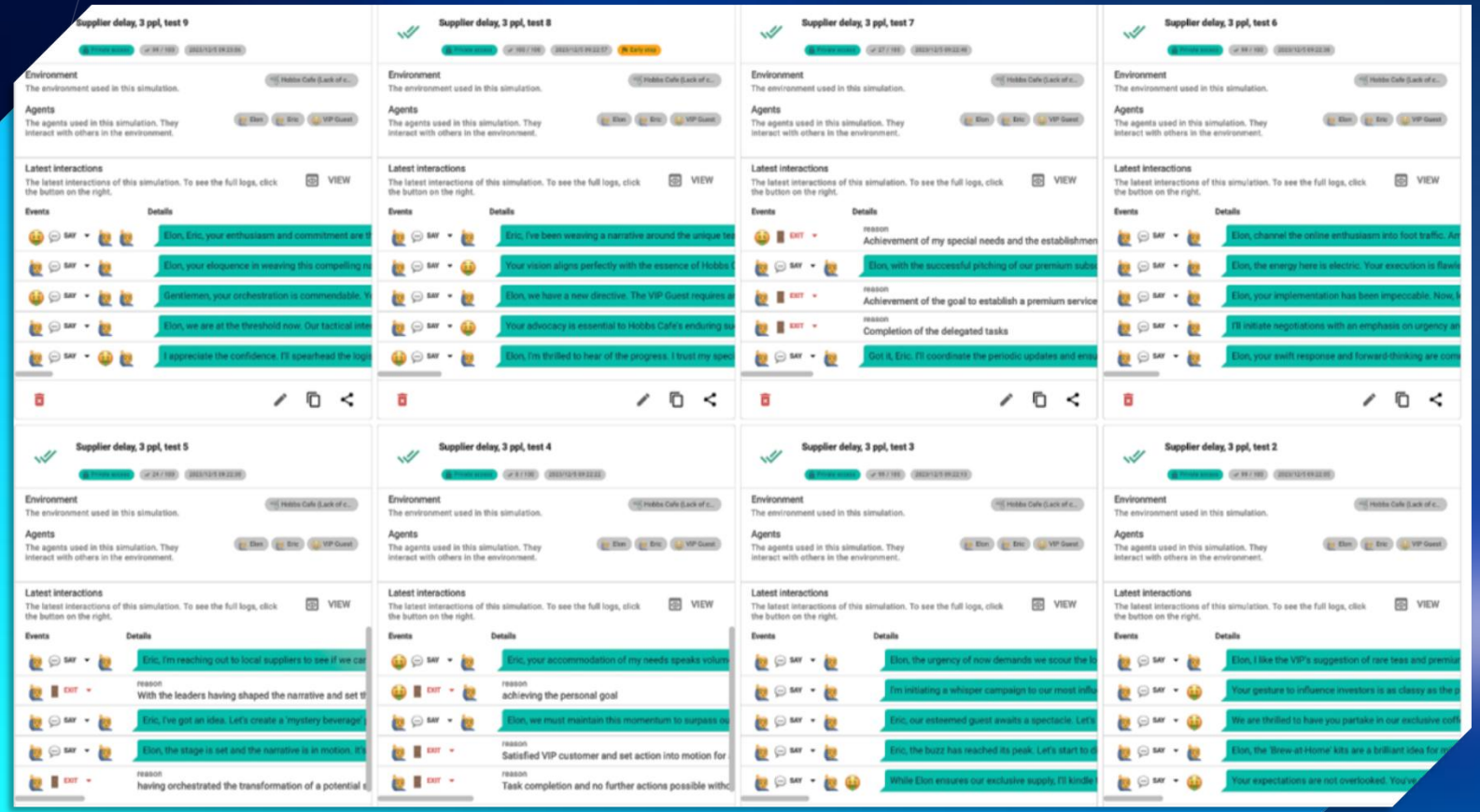
INNOVATION PLAN

Game development

Simulation experiment

Promotion campaigns

SIMULATION EXPERIMENT



We use PromptPerfect platform for our experiments where we can set AI agent personalities work scenarios, and tasks to observe and analyze task completion efficiency across various personality combinations

SIMULATION STEPS

Taking coffee bean procurement as an example:

STEP ONE

Agent Setting

- Coffee shop owner (extrovert)
- Coffee shop employee (introvert)
- Coffee bean supplier

STEP TWO

Scenario Setting

- The Coffee Shop doesn't have enough coffee beans in stock
- 20-40 kilograms of coffee beans at the lowest price no higher than 120 RMB
- The coffee bean supplier wants to maximize revenue: sales quantity * sales price the sales price cannot be lower than 80 RMB

STEP THREE

Experimental group setting

- Group A: Extroverted boss + introverted employee
- Group B: The extroverted boss only
- Group C: The introverted employee only

STEP FOUR

Running Simulations

- Each set of experiments was repeated 3 times

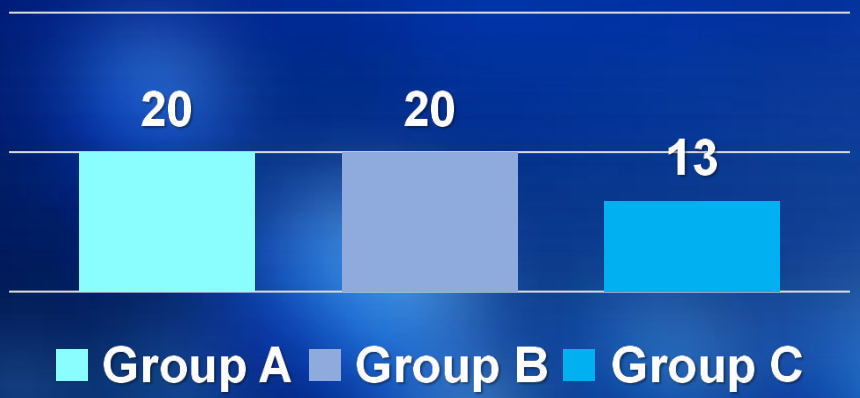
STEP FIVE

Result Analysis

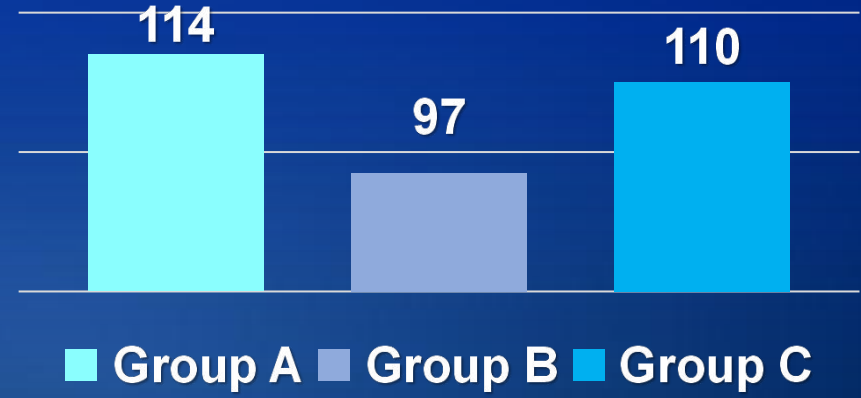
- Dependent factors
  Efficiency: rounds of conversations
  Result: final purchase price

EXPERIMENT RESULT ANALYSIS

Average rounds of conversations



Average final procurement price



Groups	Group A #1	Group A #2	Group A #3	Group B #1	Group B #2	Group B #3	Group C #1	Group C #2	Group C #3
Price	120	114	110	94	111	87	115	113	102
Rounds	19	25	16	26	18	16	12	14	14

Note:

- Group A: Extroverted boss + introverted employee
- Group B: The extroverted boss only
- Group C: The introverted employee only

AI AGENT ROLE PLAYING GAME DEVELOPED

Tech Framework

Game Access

Game Intro

OpenAI

https://chat.openai.com/g/g-ZJdzRP2j4-chan-pin-tuan-dui-mo-ni

Team Communication Simulation

- Product Manager - Designer - Programmer combination
- The user will collaborate with AI-agent designers(extroverted) and programmers(introverted) in various scenarios

LiveCase

https://www.livecase.com/case/65757d381eca5ac440709939

A Day in Life

- Achieve controlled experience with detailed setup
- Customize characters environment, scenarios dialogue interactions

PROMOTION CAMPAIGNS

Topic: AI Fortune Telling

(public session & researcher session)

Content

- Process of conducting social experiments with AI agents
- Potential conclusions from AI-driven simulations
- AI agent role-playing game beta release
- Development insights and experiences Sharing

Goal

- Assess public and professional understanding of AI role-play games
- Gather questions and feedback for improvement

RESULT & EFFICACY

AI Agent Role Playing Game Development

DURATION:

1st Jan - 8th April 2024

DISTRIBUTION:

Shanghai & Beijing

3,034

people

Number of game players

20+

minutes

Average length of the game

RESULT & EFFICACY

“AI Agent - Social Science Study” Research Toolkit

Guidebook

Open-source website mirrorsquad.strikingly.com

5
Schools

4
Educational institutions

2
Enterprises

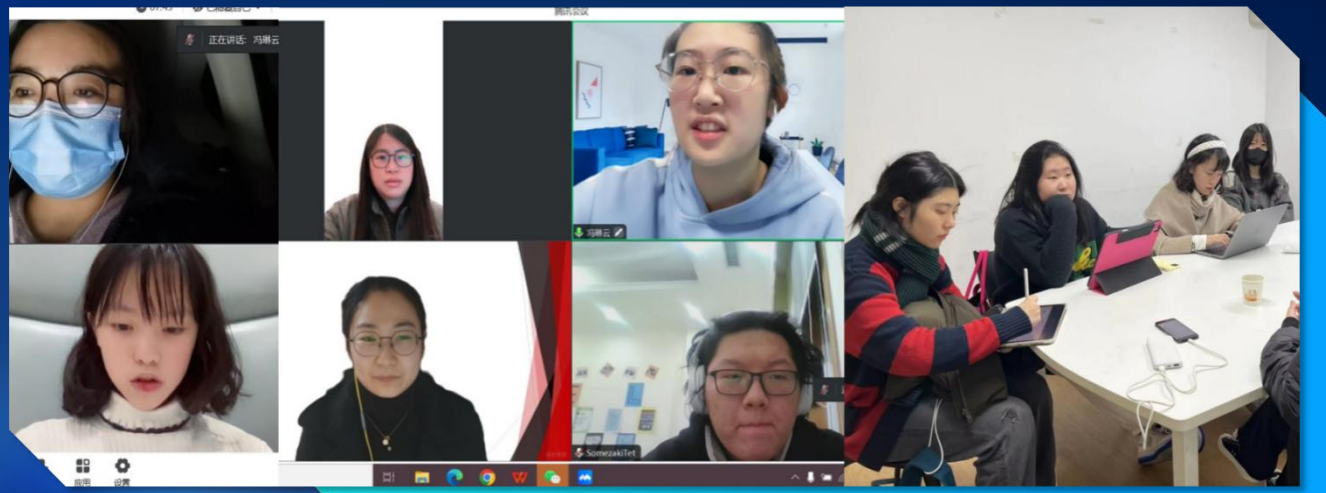
14,307
Website viewership (as of 7th April)

RESULT & EFFICACY

Participation and Recognition from Two Target Audiences

"This tool can simulate highly customized real scenarios to study the specific interactions and performance of team members, which can be utilized in training and even recruitment processes."

"It provided me with insights into team dynamics and suggestions for responses that I would not normally consider, reducing biases in my decision-making process."



3,116

people

Total live broadcast viewers

50+

comments

Interactive comments

FUTURE PLAN

Limitation

- Limited to introvert/extrovert theory
- Requires validation through long-term data

Collaboration

- Collaborate with Columbia and Fudan university for broader research reach
- Assess AI social simulator's value and applications

Feedback

- Enhance scenario relevance to real life
- Improve AI response speed reduce interaction rounds

Optimization

- Add diverse scenarios to role-play game
- Enhance utility based on user feedback for team development

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THANK YOU

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