

IOWA STATE UNIVERSITY

2021 Summer Research Symposium

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Human-Agent Teams and MazeWorld

What is a Human-Agent Team? (HAT)

- Groupings of human and artificial intelligent software that work jointly to accomplish a given task
- Examples: Siri, Alexa, self-driving cars

Creating HATs

- Quantifying interactions between teammates
- Analyzing individual actions to determine value
- Teamwork vs. Taskwork

The study of HAT draws on a variety of domains:

- Industrial Applications
- Organization Psychology
- Team Dynamics
- Intelligent Team Tutoring Systems
- Human Factors

MazeWorld Testbed

This web-based Unity driven game looks to gather quantifiable data about team interactions by tasking teams with collecting coins placed throughout a maze.

- Teams of 3-6 members
- Each member has a different interdependent role that is essential to the completion of the task (Collector, Explorer, Tactical)
- Members communicate using in-game texting system

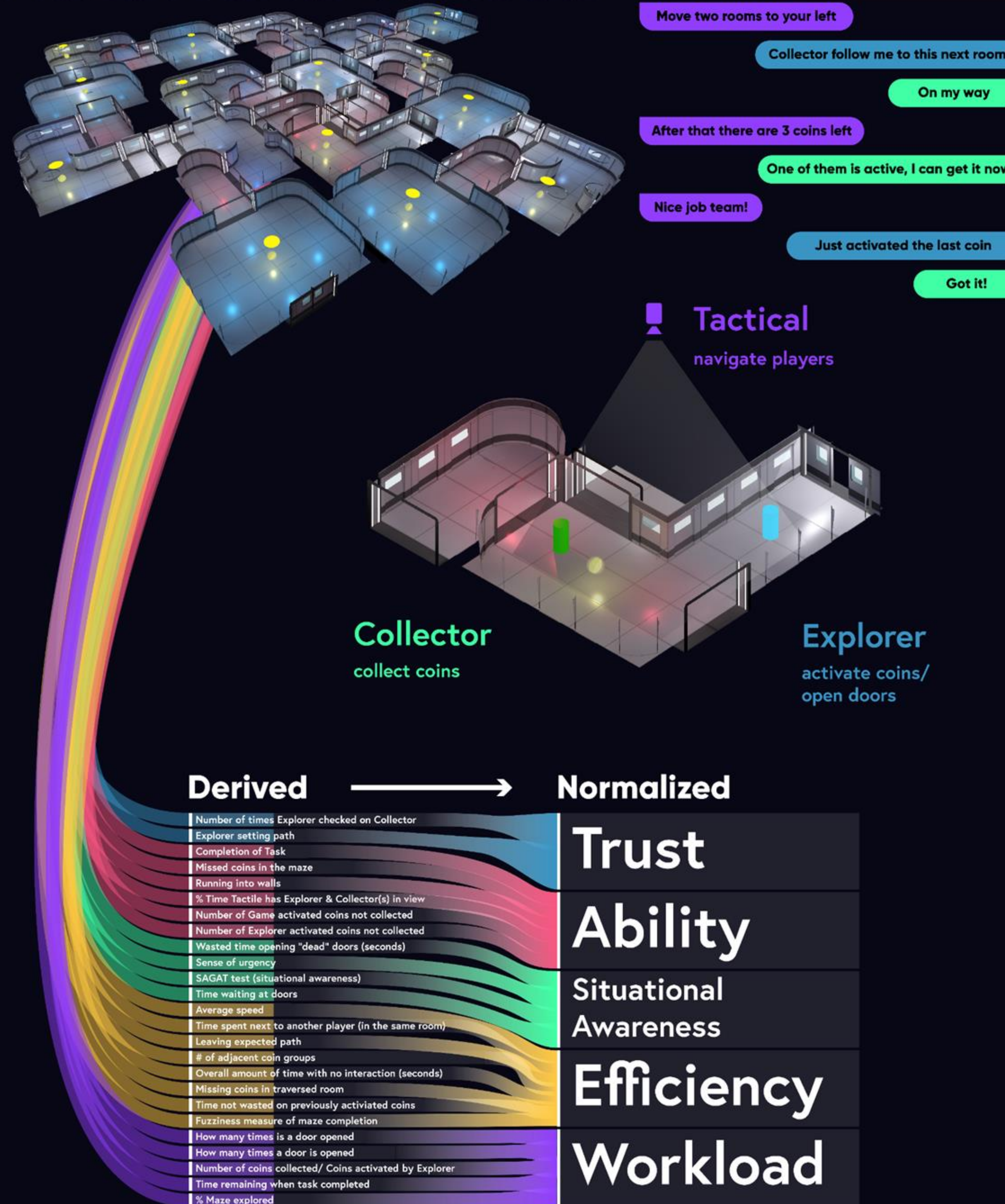
Data Collection

- NASA TLX and Experience Surveys
- Logs research data to an ISU server
- "Replay" feature allows past games to be reviewed

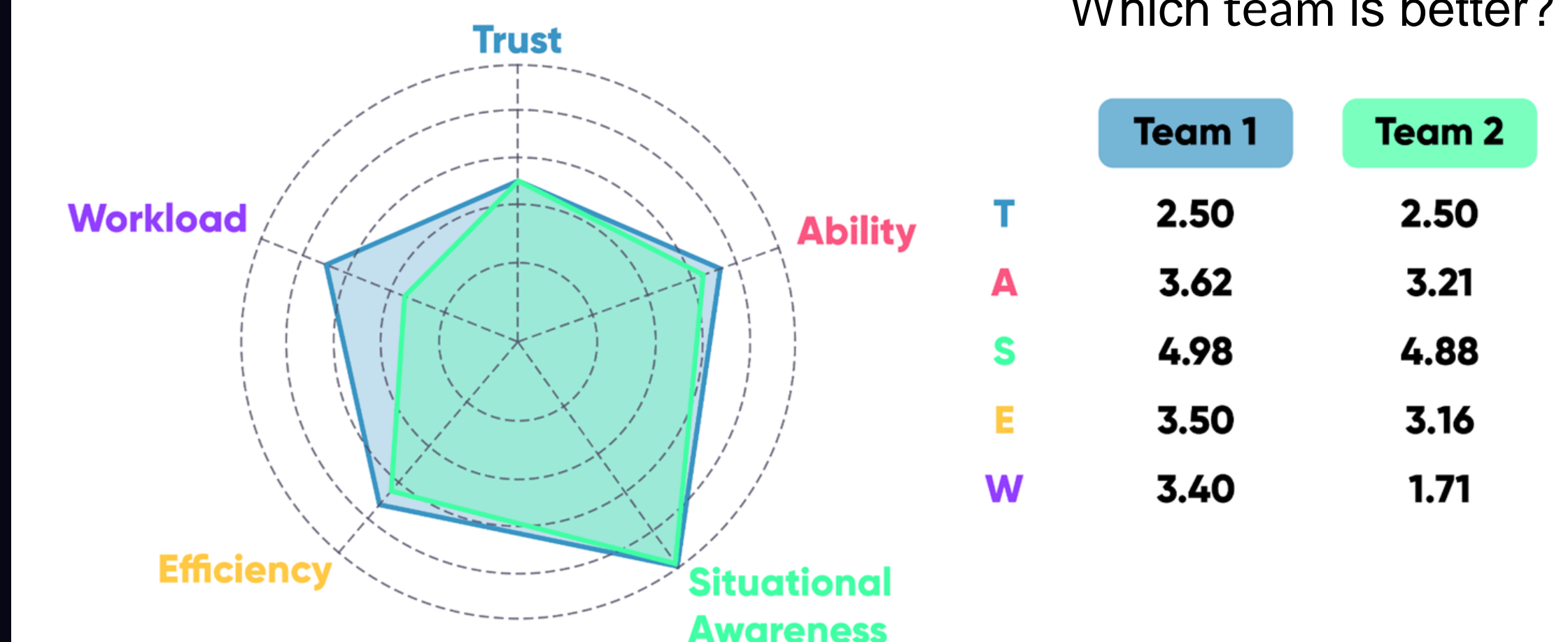


Interesting in becoming a participant?
Sign up using the QR Code

MazeWorld Testbed



Pilot Results



Analyzation and Evaluation

Initial pilot data collected helps evaluate whether metrics are appropriate.

Evaluation

Currently, recruiting participants for trials is the top priority so that data can be gathered and later analyzed to aid in the creation of the in-game agent.

Improvements have been implemented to the in-game text system and a streamlining of the trial process will both hopefully increase participant experience and ensure that data collection is smooth and secure.

Next Steps

- Create derived metrics for the chat log using natural language processing.
- Compare metrics based on whole team vs. metrics based on individual team members. How does one bad teammate affect the team?

Lessons Learned

Some of our metrics need to be broken down into smaller categories to keep them from overlapping.

Future Work

- Update and add complexity within MazeWorld
- Add agents within the game as players
- Standardize approach to analyzing team performance based on previous research and MazeWorld
- Test transfer of team skill ratings:
Do MazeWorld team skill ratings predict effective teaming in other domains?