

The ToMCAT Dataset

<https://tomcat.ivilab.org>

Adarsh Pyarelal

NeurIPS 2023 Datasets and Benchmarks Track



Contributions

Contributions



**Multimodal human-machine
teaming dataset**

Contributions

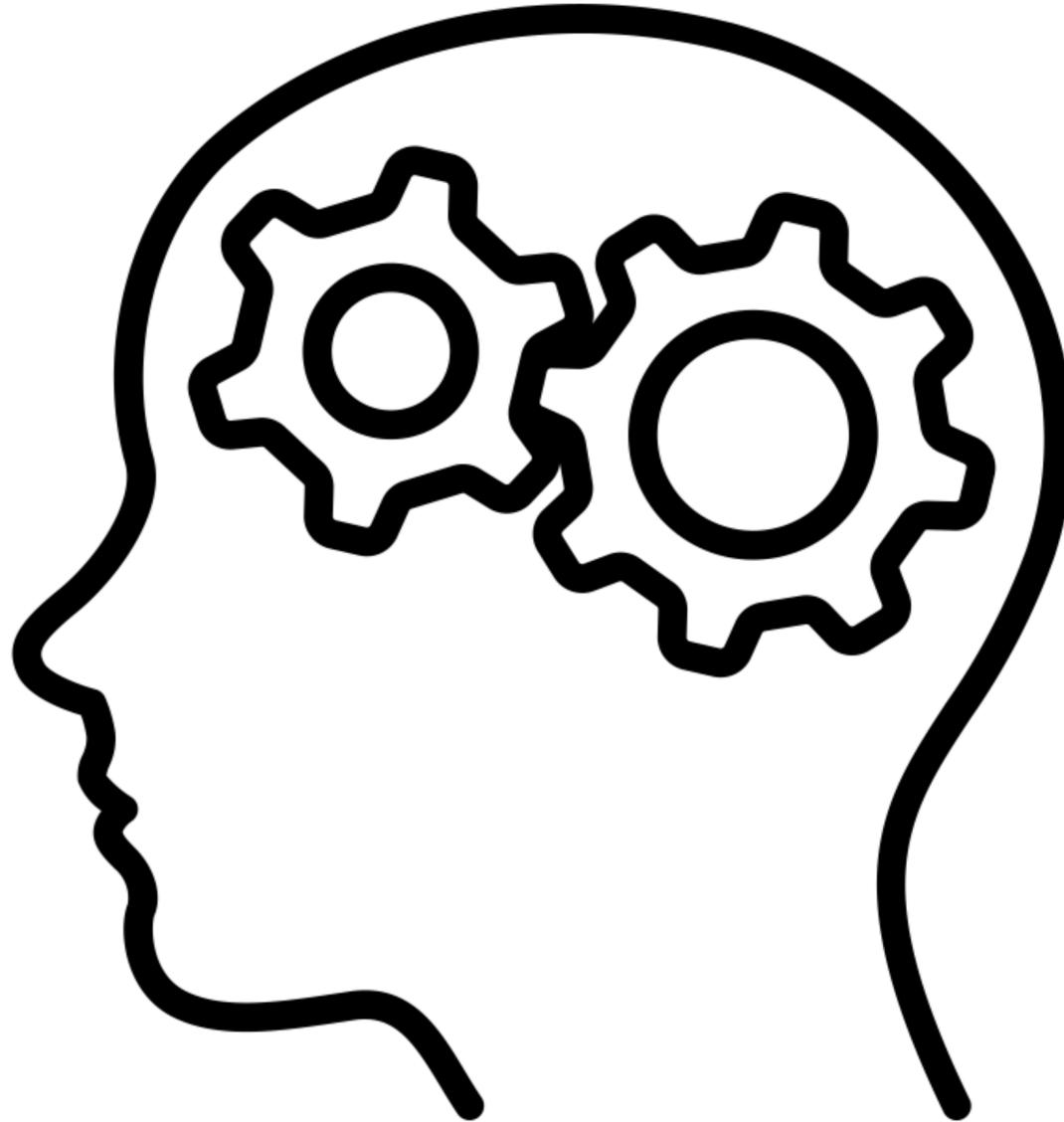


**Multimodal human-machine
teaming dataset**

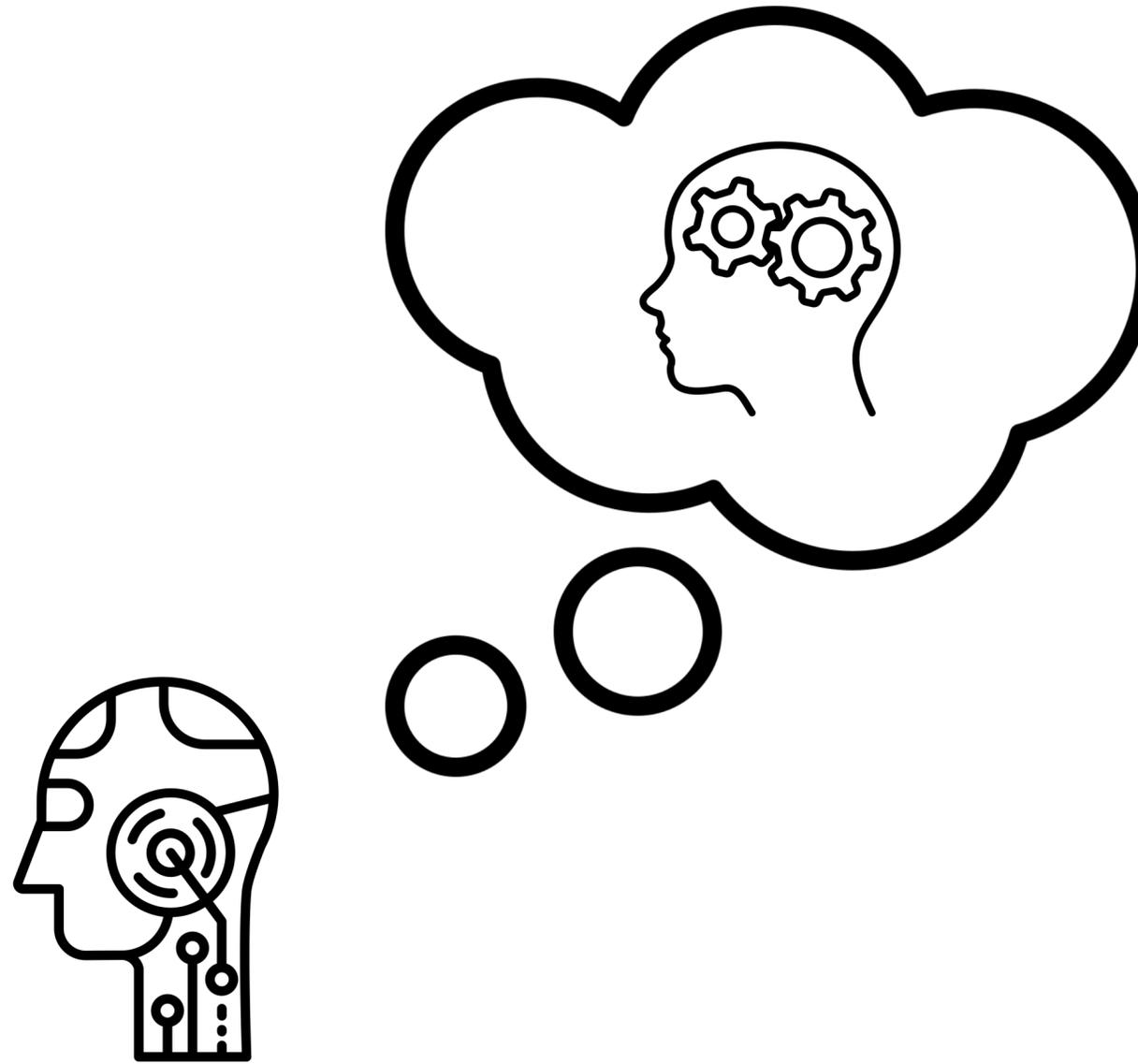
Illustrative experiments using brain data

- ♦ Predicting affect from brain scan data
- ♦ Linking temporal correlation of brain signals with team performance

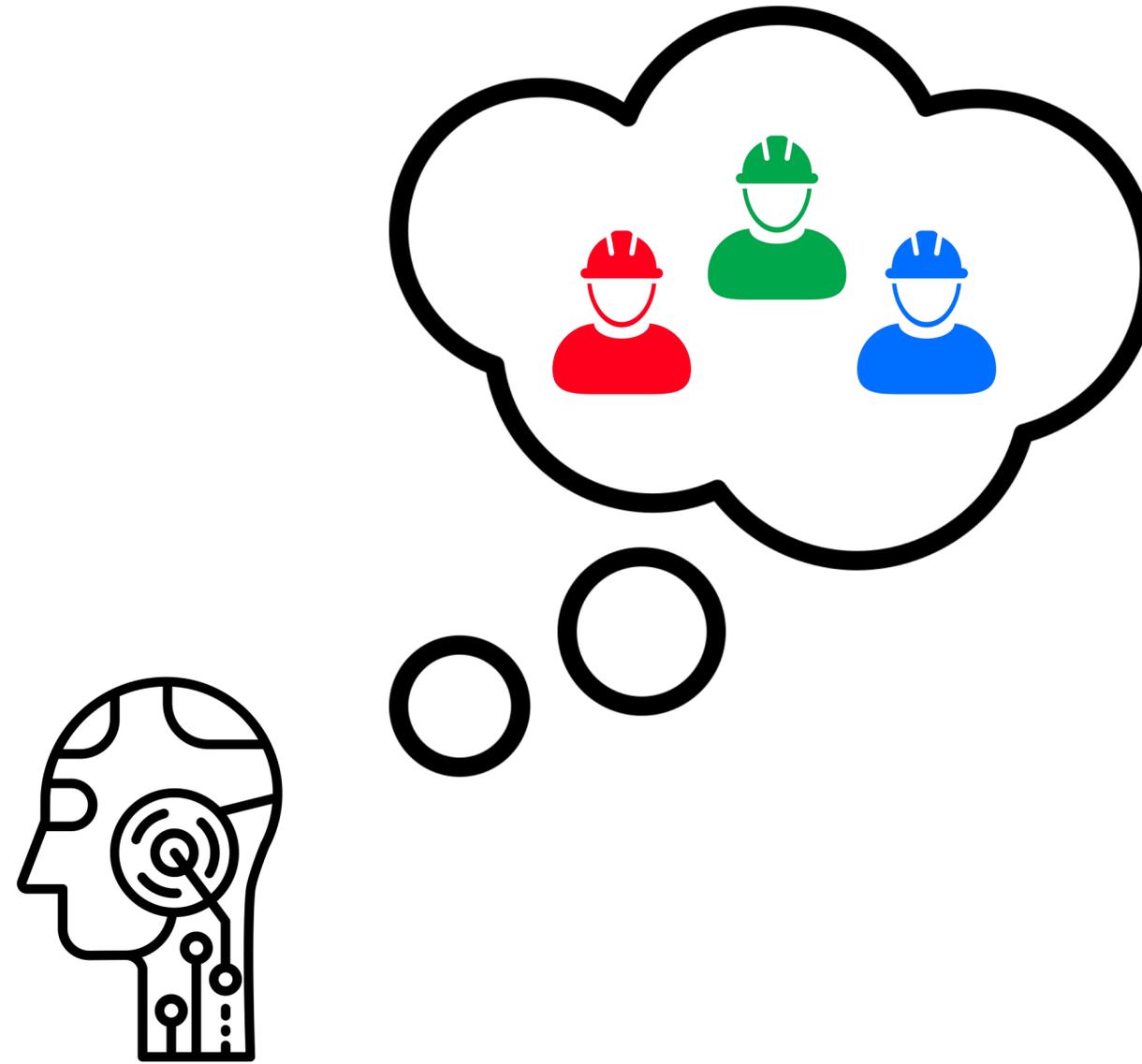
Theory of Mind



Machine Theory of Mind



Machine Theory of Teams



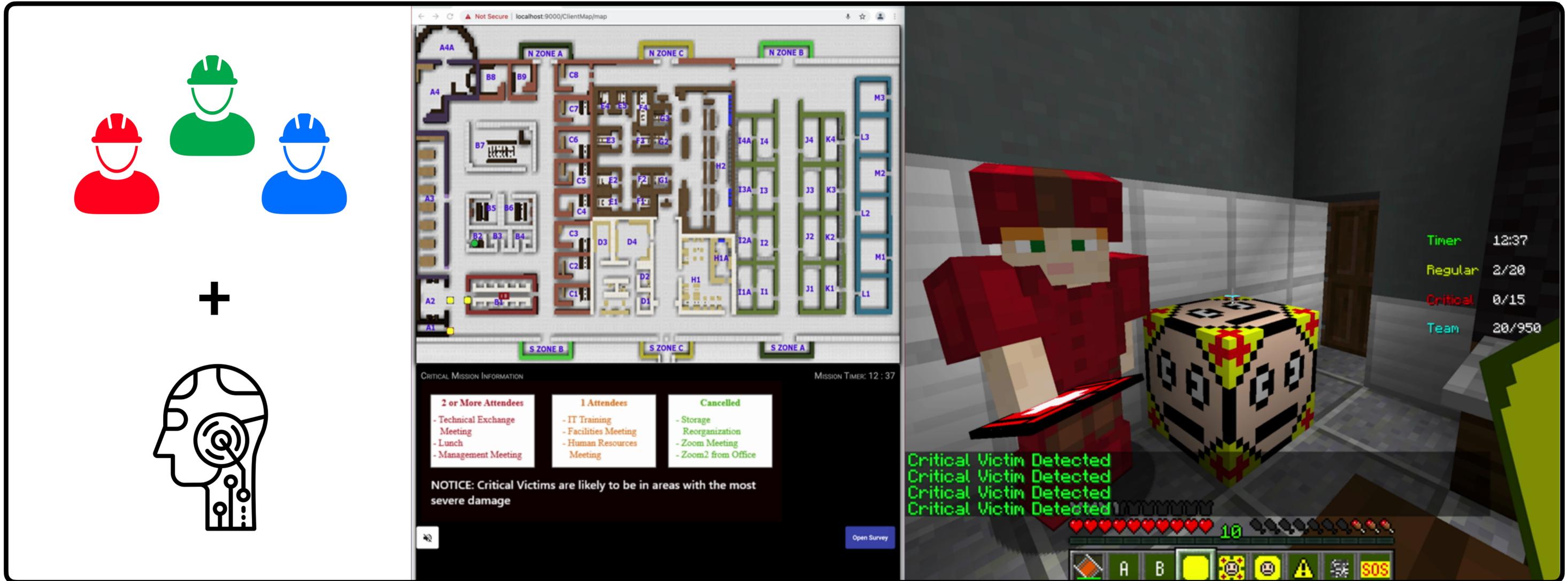
Teams of humans...



...working with an AI agent...

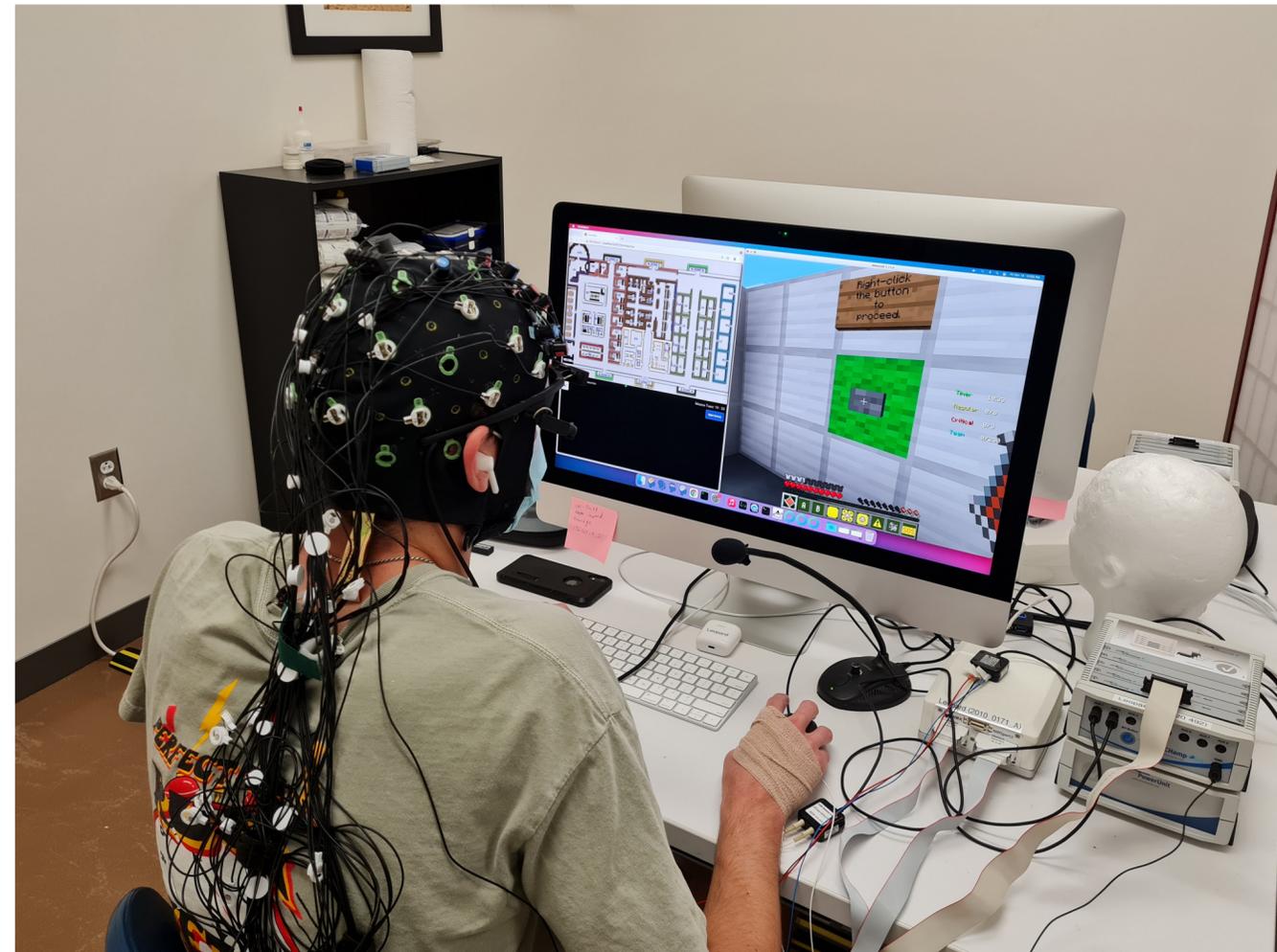


...in a Minecraft-based testbed*

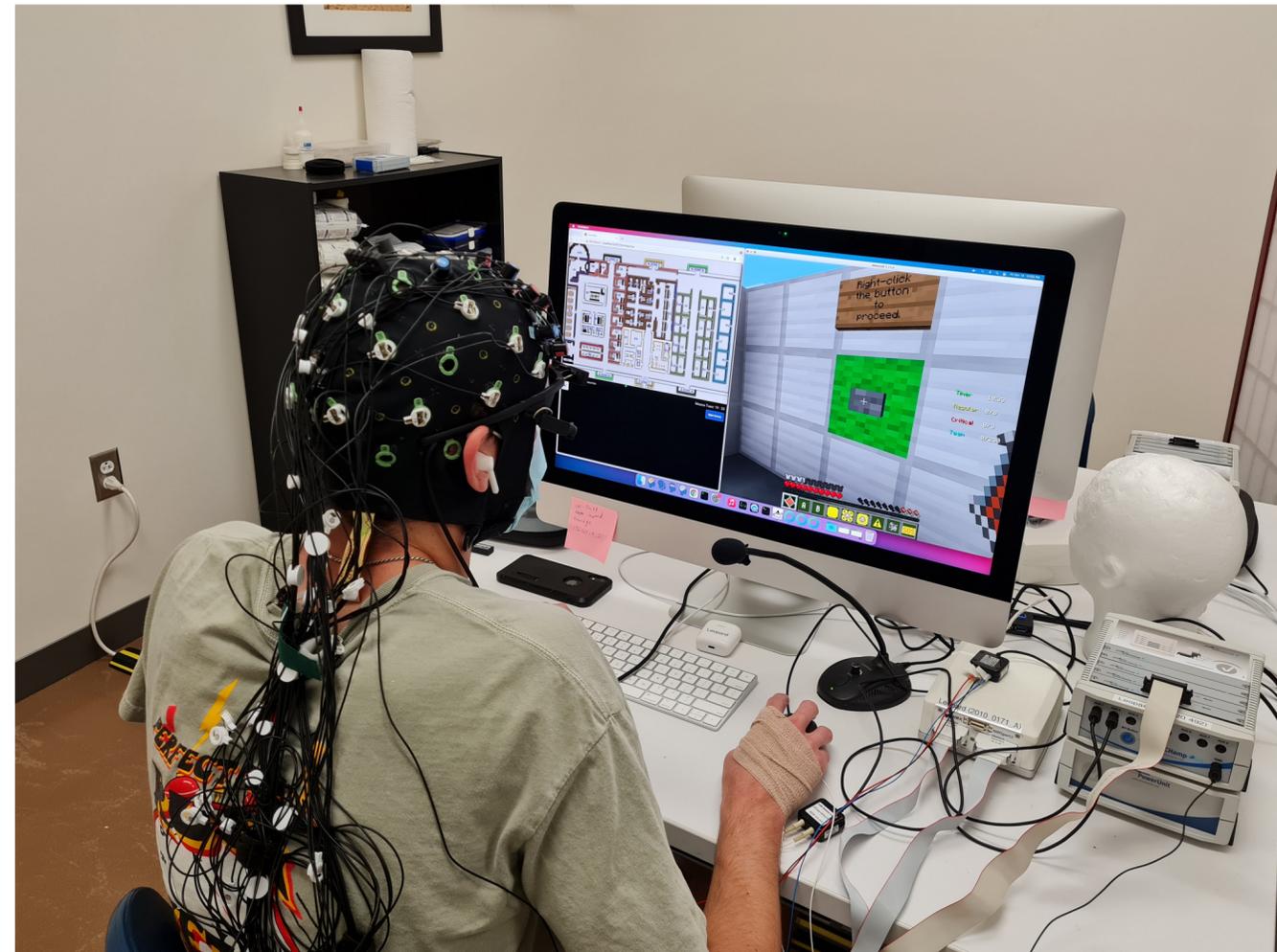


*The testbed was developed as part of DARPA's ASIST program and is available at <https://gitlab.com/artificialsocialintelligence/study3>

Modalities in the ToM-CAT dataset



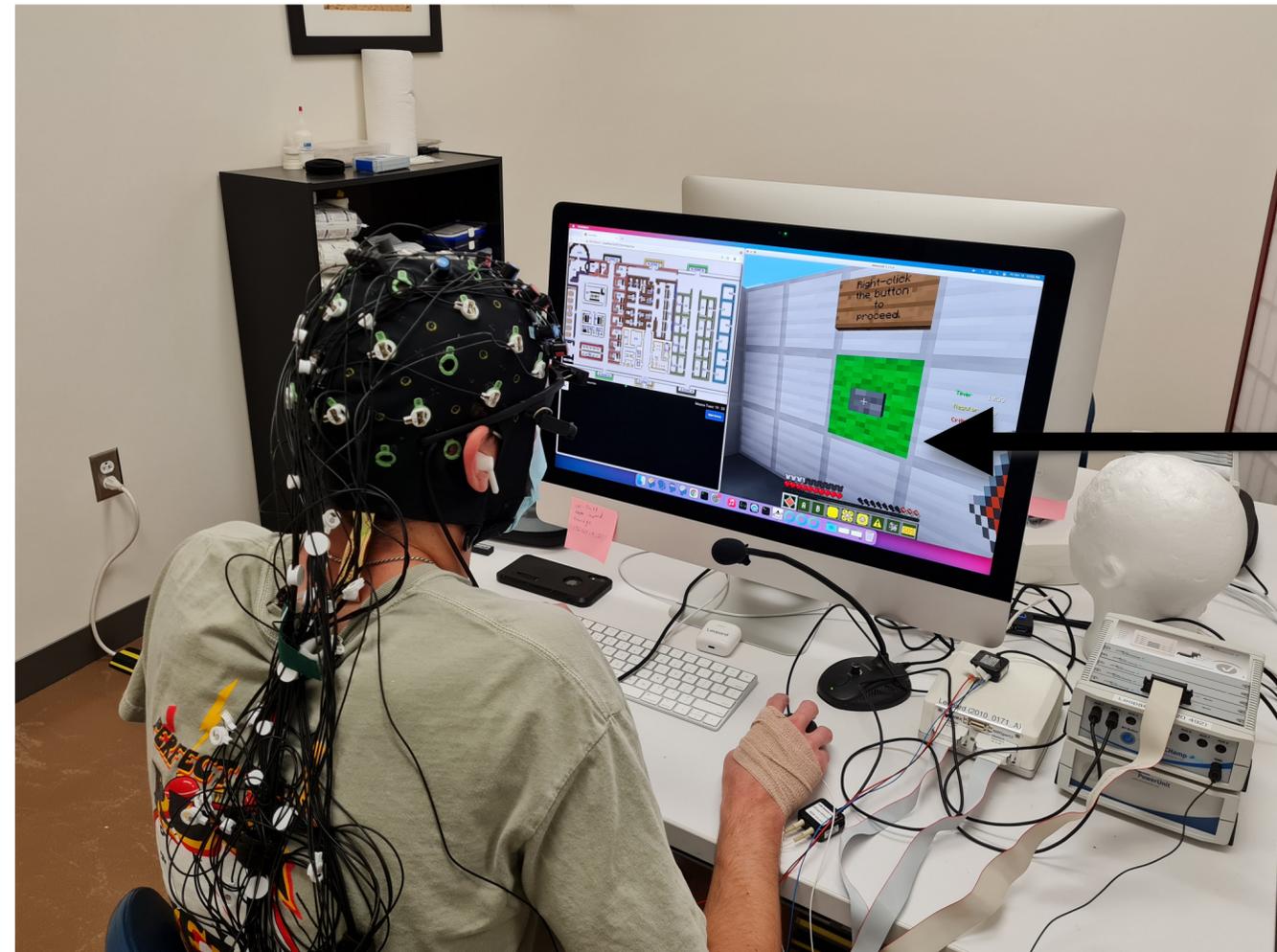
Modalities in the ToM-CAT dataset



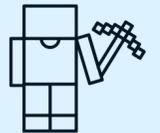
Questionnaires



Modalities in the ToM-CAT dataset



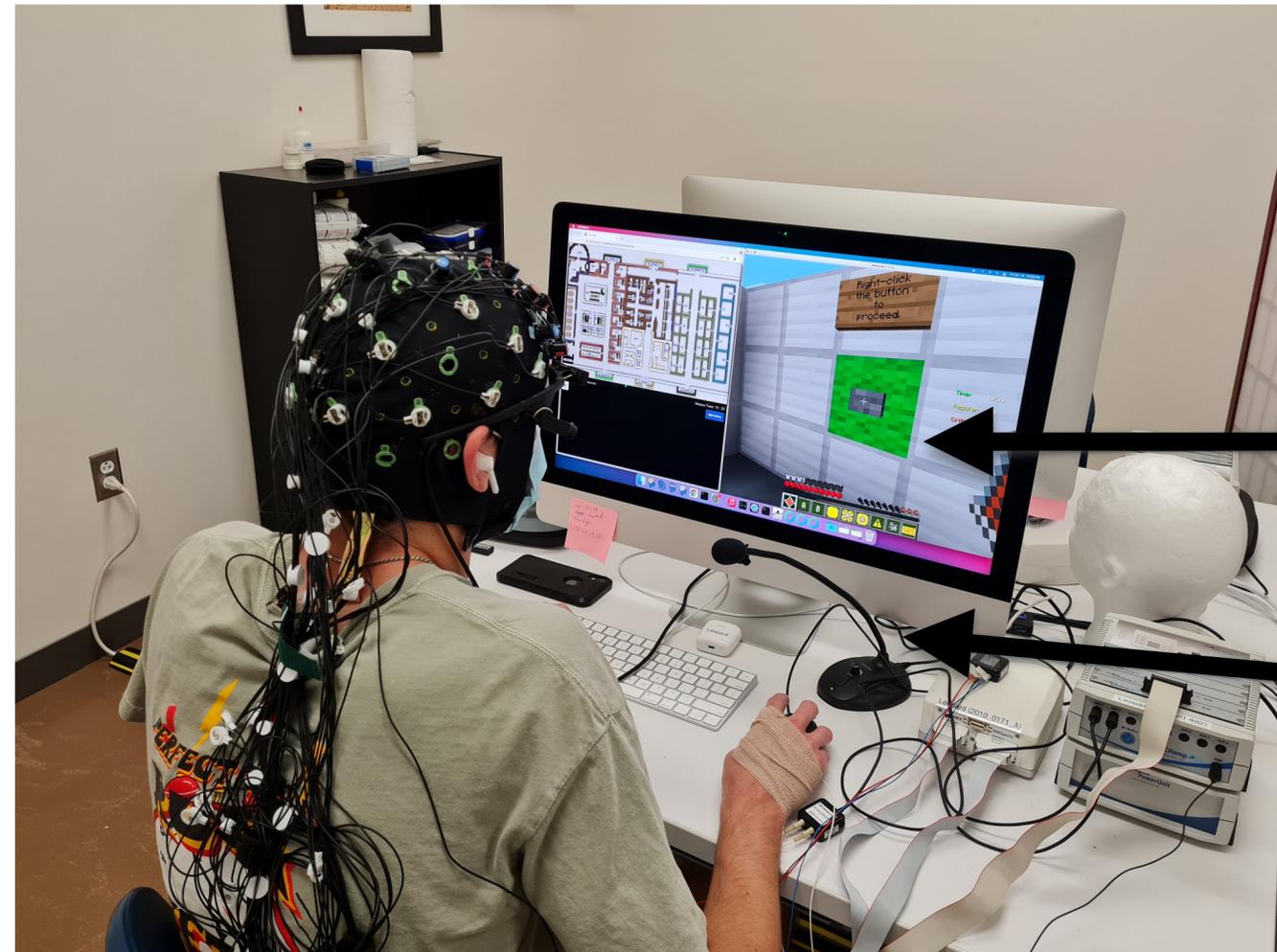
Gameplay data



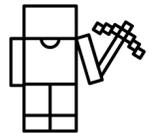
Questionnaires



Modalities in the ToM-CAT dataset



Gameplay data



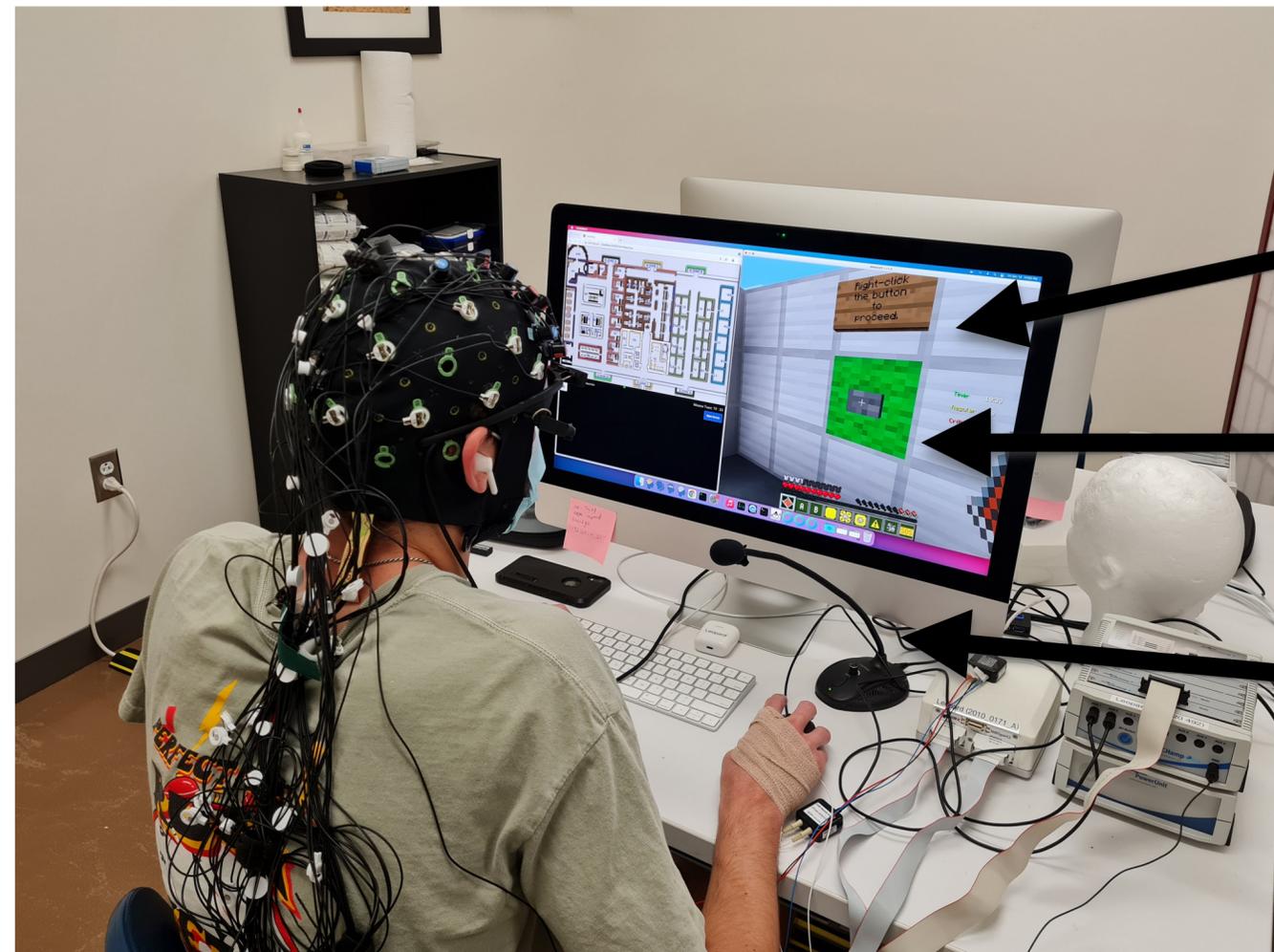
Audio



Questionnaires



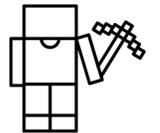
Modalities in the ToM-CAT dataset



Screenshots



Gameplay data



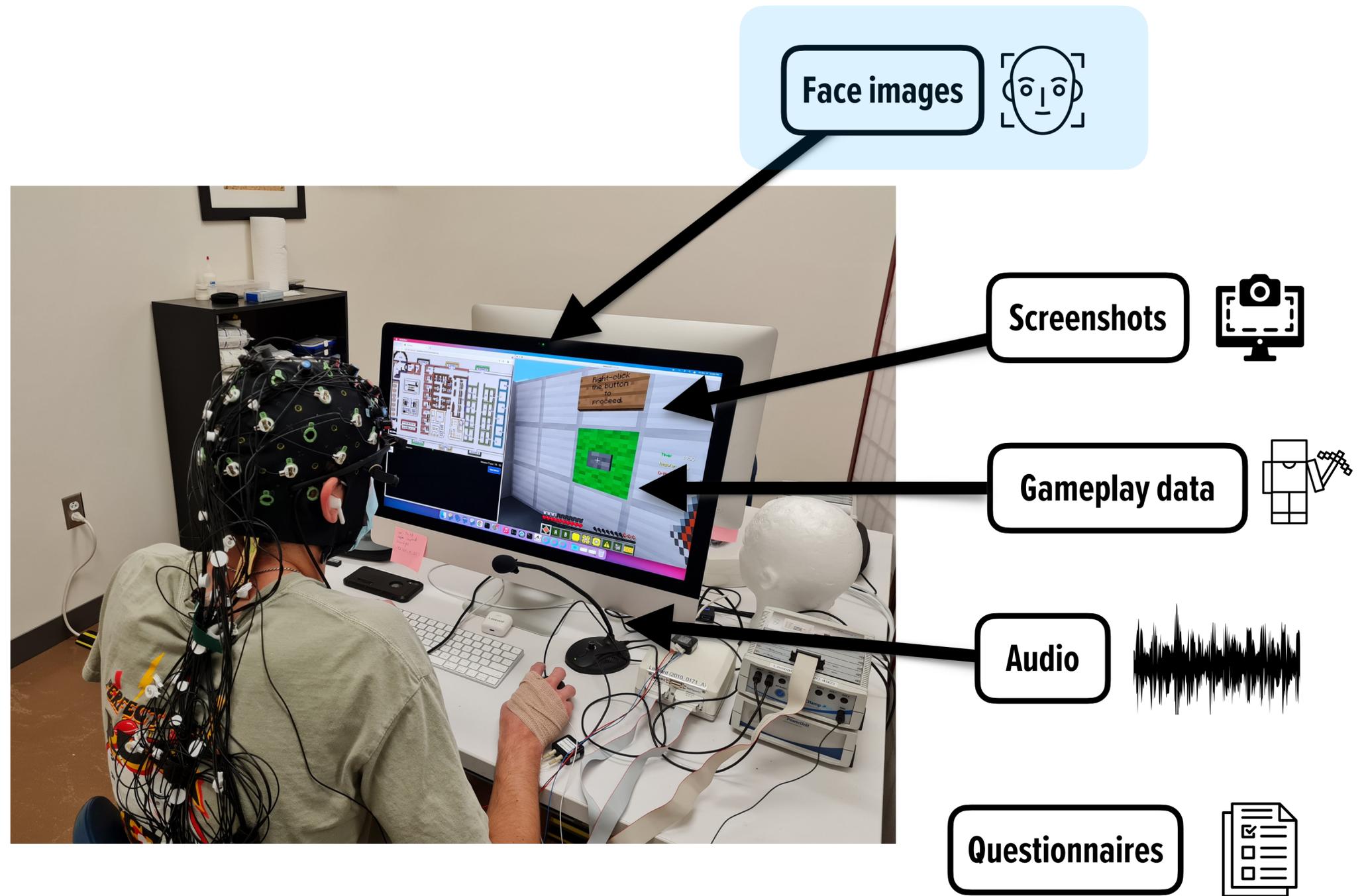
Audio



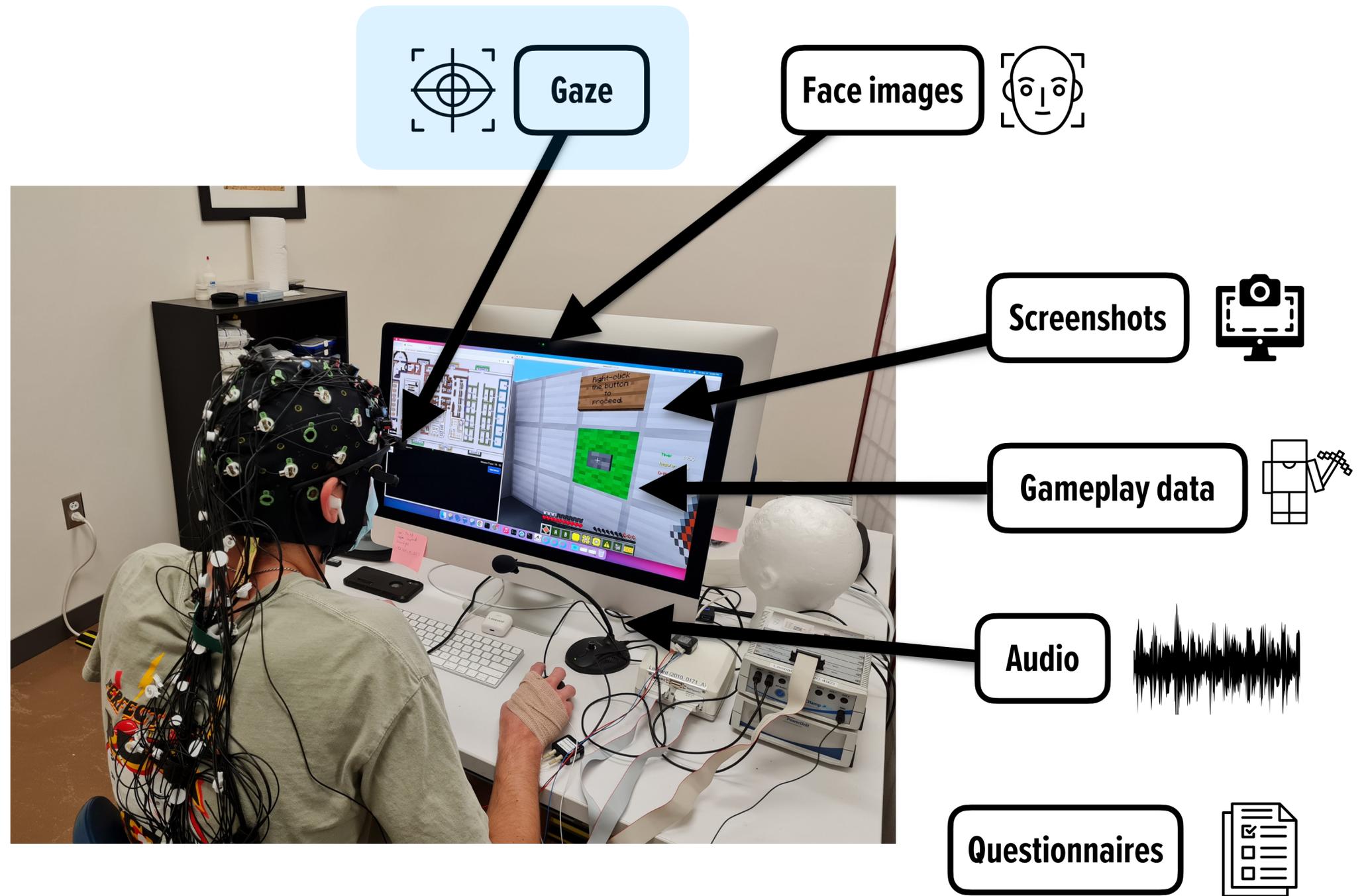
Questionnaires



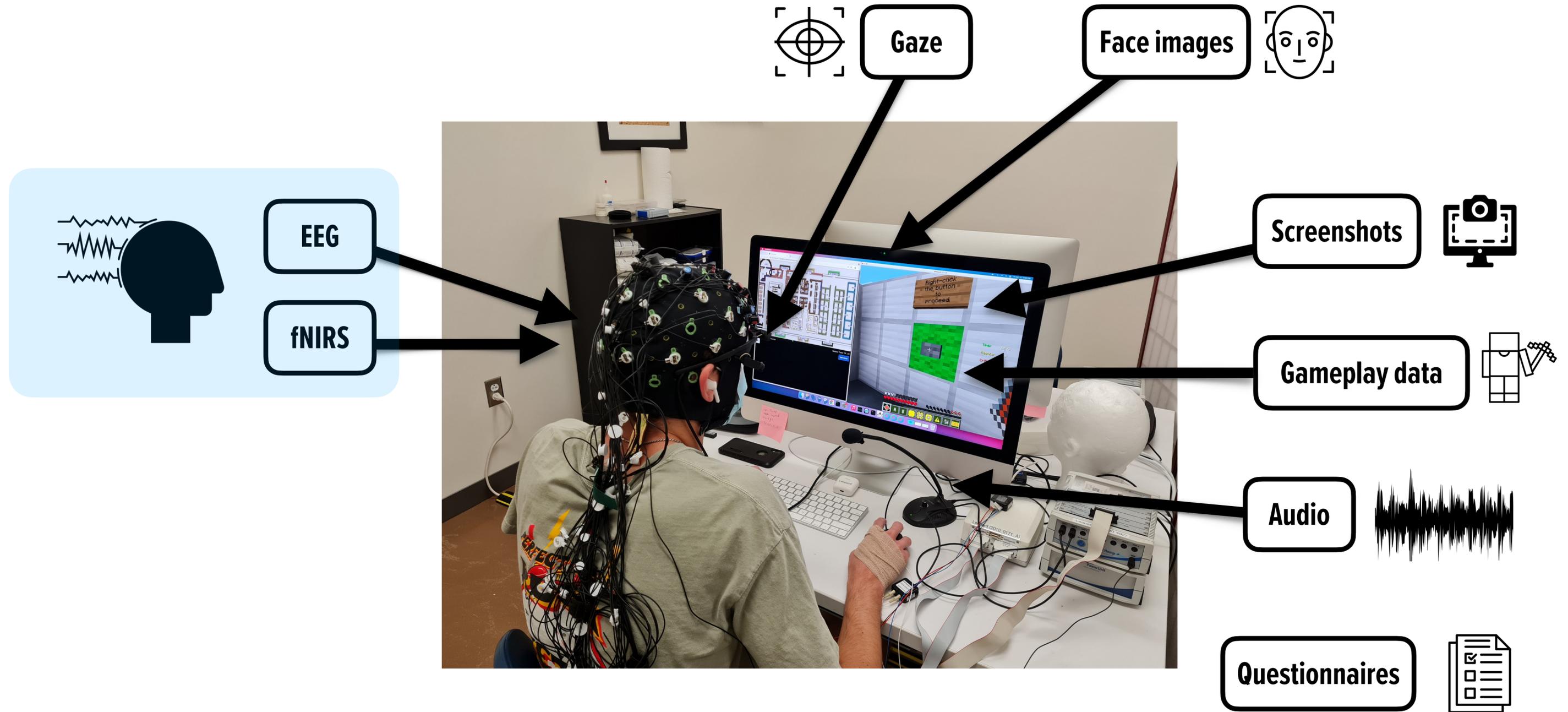
Modalities in the ToM-CAT dataset



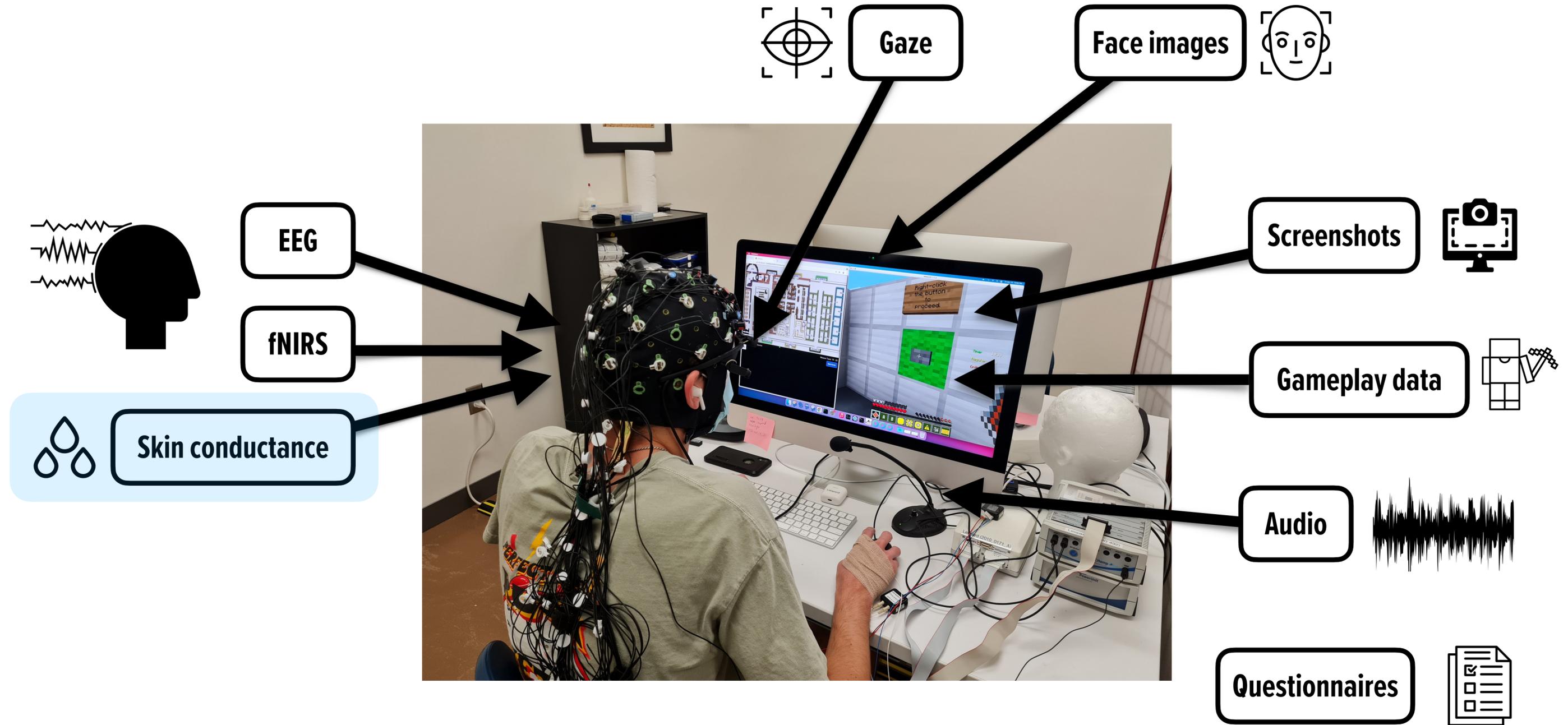
Modalities in the ToM-CAT dataset



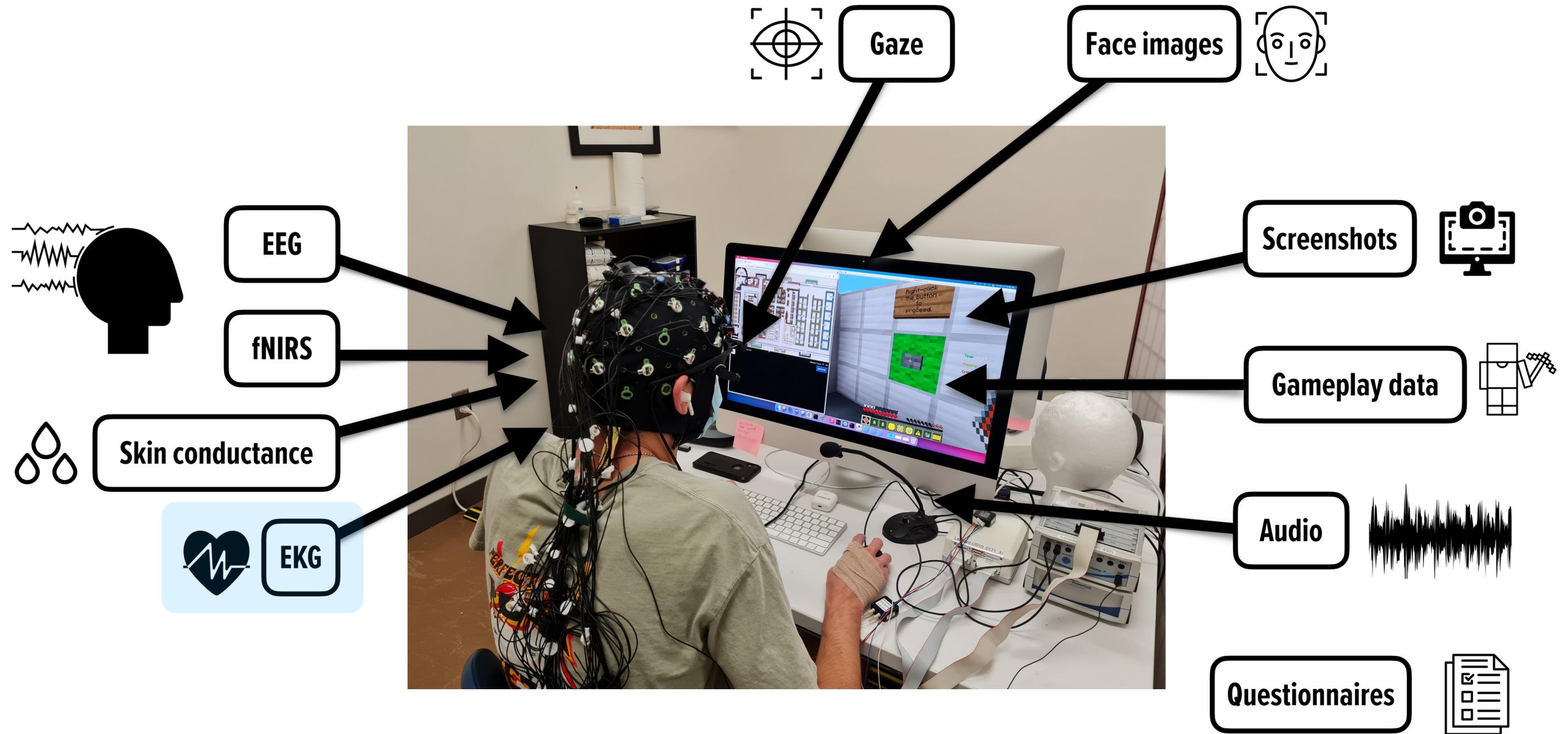
Modalities in the ToM-CAT dataset



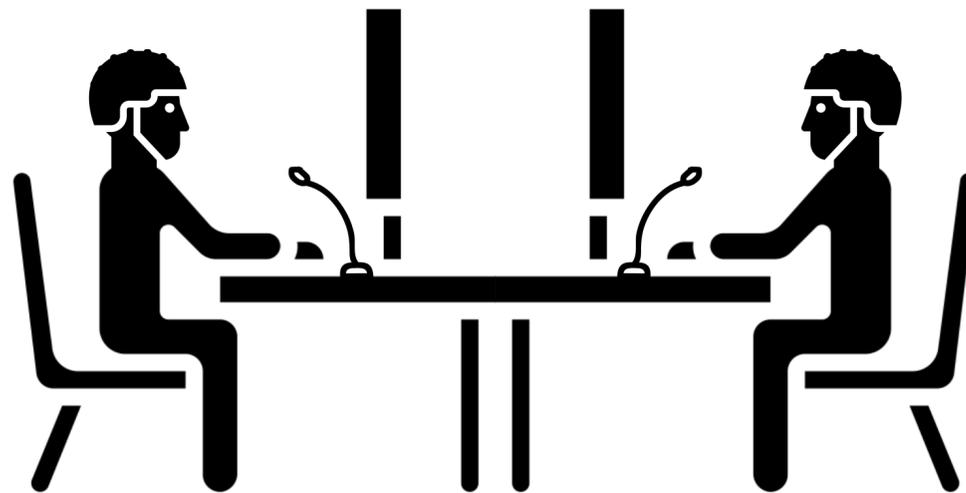
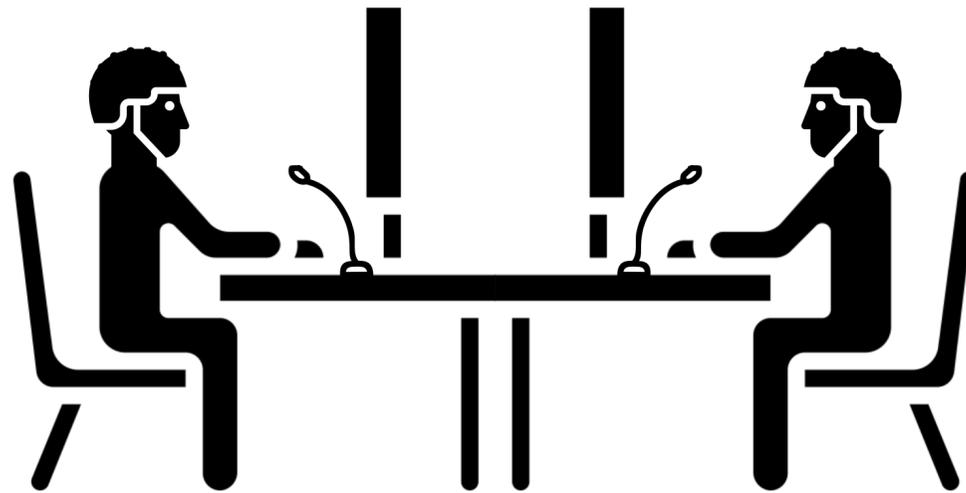
Modalities in the ToM-CAT dataset



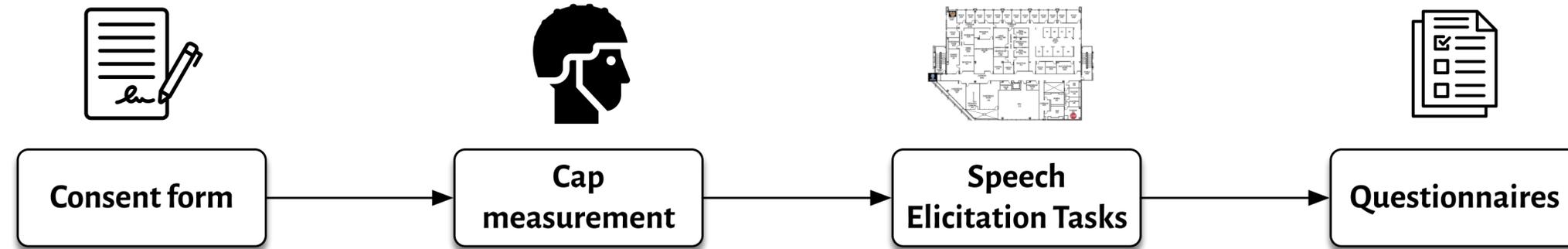
Modalities in the ToM-CAT dataset



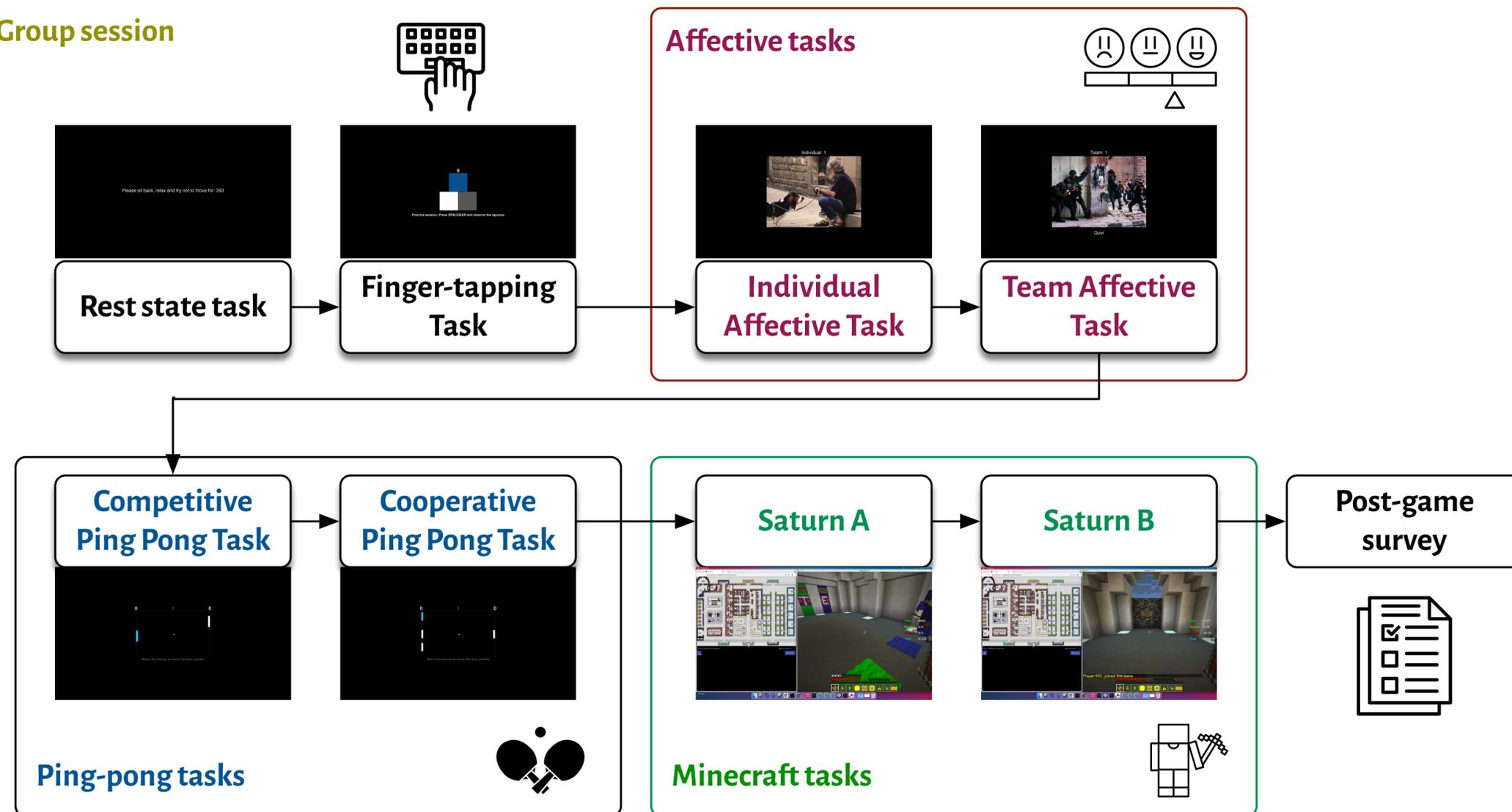
Participant layout



Pre-session



Group session



Task flow

tomcat.ivilab.org/tomcat/screen_capture?task_exact=saturn_b

Tenure ▾ Notion INFO 521 ▾ NGT ▾ ARL Collab ▾ ML4AI ▾ Ramona ▾ SKEMA ▾ ASIST-ToMCAT ▾ Completing F...ion & Impact ASIST TA3 ▾

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screen_capture

Table with screen capture data.

Column descriptions

group_session
Group session ID

task
Task ID.

station
The iMac that the participant was stationed at.

participant
Participant ID. A participant ID of -1 indicates an unknown participant. All rows that do not have values for the `task` column will have their participant ID set to -1. In the future, we will label some of these inter/pre/post task rows with the correct participant ID.

timestamp_unix
The Unix timestamp of the event.

timestamp_iso8601
The ISO-8601 timestamp of the event.

filename
Name of the screenshot file.

timestamp_origin
The source of the timestamp. The priority is precision-driven. LSL time are used if available, otherwise, creation time is used if available. Modification time is used as last resort.

where task = "saturn_b"

task = saturn_b *

- column - =

Apply

[View and edit SQL](#)

This data as [json](#), [copyable](#), [CSV \(advanced\)](#)

group_session	station	participant	id	task	timestamp_unix	timestamp_iso8601	filename	url	timestamp_origin
exp_2022_10_07_15	leopard	34	50485	saturn_b	1665189669.8526385	2022-10-08T00:41:09.852638+00:00	output050486.png		modification
exp_2022_10_07_15	leopard	34	50486	saturn_b	1665189669.9326417	2022-10-08T00:41:09.932642+00:00	output050487.png		modification

Web interface

The screenshot shows the GitHub interface for the repository 'ml4ai / tomcat'. The repository is public and has 21 stars, 7 forks, and 13 watchers. The main content area displays a list of files and folders, with the most recent commit by 'adarshp' updating the DB diagram to include 'in...' last week, with 527 commits. The repository description is 'ToMCAT: Theory of Mind-based Cognitive Architecture for Teams'. The right sidebar shows the repository's metadata, including the README, MIT license, activity, and 21 stars. The 'Releases' section shows one release: '2021 IEEE Conference o...' on Apr 16, 2021, marked as 'Latest'. The 'Packages' section indicates no packages are published. The 'Contributors' section shows 25 contributors.

ml4ai / tomcat

Code Issues 43 Pull requests 3 Discussions Actions Projects 1

tomcat Public Edit Pins Unwatch 13 Fork 7 Star 21

master Go to file Add file Code

About

ToMCAT: Theory of Mind-based Cognitive Architecture for Teams

ml4ai.github.io/tomcat/

Readme MIT license Activity 21 stars 13 watching 7 forks Report repository

Releases 1

2021 IEEE Conference o... Latest on Apr 16, 2021

Packages

No packages published Publish your first package

Contributors 25

File/Folder	Description	Last Commit
.github/work...	Update deploy.yml	7 months ago
conf	Instructions on implementing ...	3 years ago
data	Documentation updates and c...	4 years ago
data_produ...	Dev rick combine data (#507)	5 months ago
docs	Postgres Migration (#542)	2 months ago
exe	Updates to the Uber Script (#...	7 months ago
external	Beautify (#343)	last year
human_exp...	Updating DB diagram to includ...	last week
libs	Adding install targets for mcg (...	2 years ago
scripts	print mission time	last year
shared_cod...	Sync tom and cat dev (#471)	last year
tools	Minecraft and LSL Integration ...	8 months ago
.clang-format	Changing indent width to 4 for...	3 years ago
.gitignore	Us cleanup (#337)	last year
CMakeLists....	Removing libmosquitto exampl...	last year
LICENSE	Create LICENSE	4 years ago
README.md	Updating workflow name and ...	3 years ago

Open-source software

Continued Engagement

- Scale and complexity of dataset make it infeasible to annotate every interesting label type
- Researchers can build upon this dataset by adding annotation layers, unlocking the ability to answer additional research questions.
- We **highly** encourage users to sign up for our mailing list to get updates on data issues and annotation layers, benchmarks, and documentation.

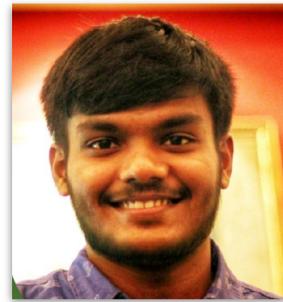
Team



Adarsh Pyarelal



Eric Duong



Caleb Jones Shibu



Paulo Soares



Savannah Boyd



Payal Khosla



Valeria Pfeifer



Diheng Zhang



Eric Andrews



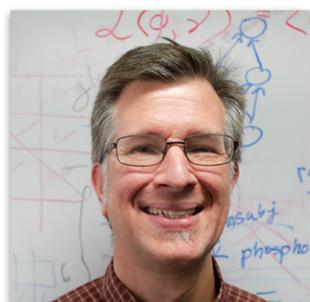
Rick Champlin



Vincent Raymond



**Meghavarshini
Krishnaswamy**



Clayton Morrison



Emily Butler



Kobus Barnard