

1. Background & Aim

To ensure the reliability of machine learning systems, a sufficient amount of **tacit knowledge** is necessary.

Tacit Knowledge is knowledge gained from personal experience that is difficult to express.

In order to elicit this tacit knowledge in an entertaining way, human contributors can play a **Game With a Purpose (GWAP)**.

This is the first GWAP designed to collect **discriminative evidence**.

Discriminative Evidence in this research is about how certain objects are associated with rooms in a house in pairwise comparisons.

2. Method

- Explore how other GWAPs collect tacit knowledge.
- Design and implement a game for collecting discriminative evidence.
- Implement player engagement systems.
- Implement a data evaluation system.
- Execute an experiment to evaluate the performance of the game.

3. Design

Two contexts and a concept are shown on the screen.



Fig. 1: Example question

Swipe the concept left, right, up, or down, depending on how the concept is associated with the contexts.

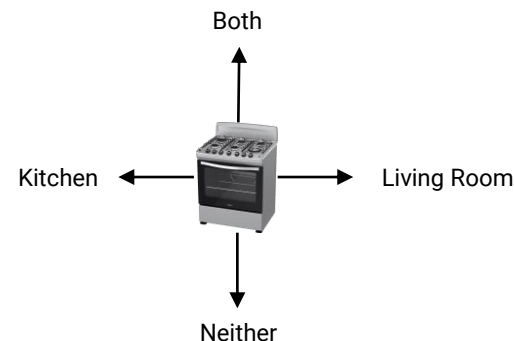


Fig. 2: Possible answers to fig. 1

After a batch of twenty questions, the contexts change in order to diversify the data.

4. Player Engagement

5. Data Evaluation

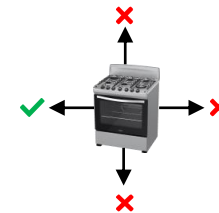
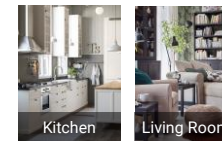


Fig. 3: Example ground truth question

Malicious input detection

Each batch contains questions for which the answer is already known, so called **ground truths**. If a player answers half of these questions wrong, the batch is rejected.

Aggregating the answers per question

For every question the answers of all players will be aggregated into a ranking.

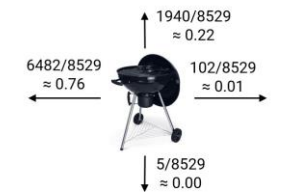
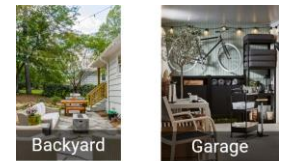


Fig. 4: Example aggregation

6. Experiment Results

We executed a small experiment where we let a few people play the game. The results of the experiment indicate that Swipe for Science:

- ✓ Has a simplistic design
- ✓ Is intuitive to control
- ✓ Collects data of good quality
- ✗ Feels repetitive and boring
- ✗ Does not retain its players

Further research and development is required to unlock the full potential of this game.