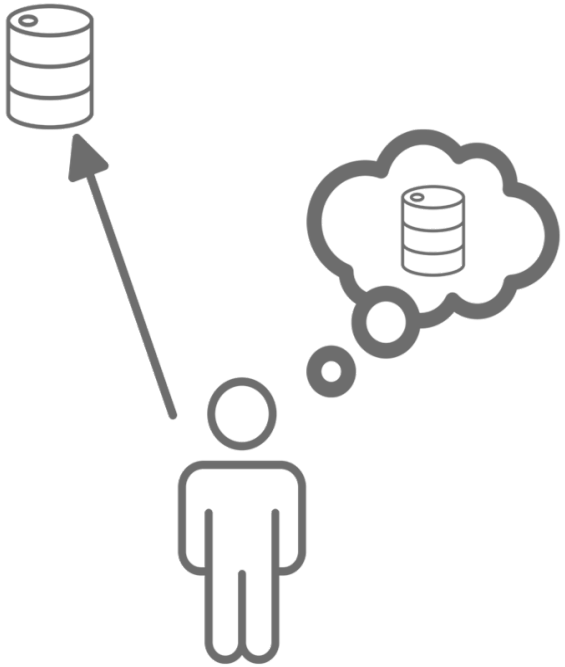
Training and assessing perspective taking

through serious gaming

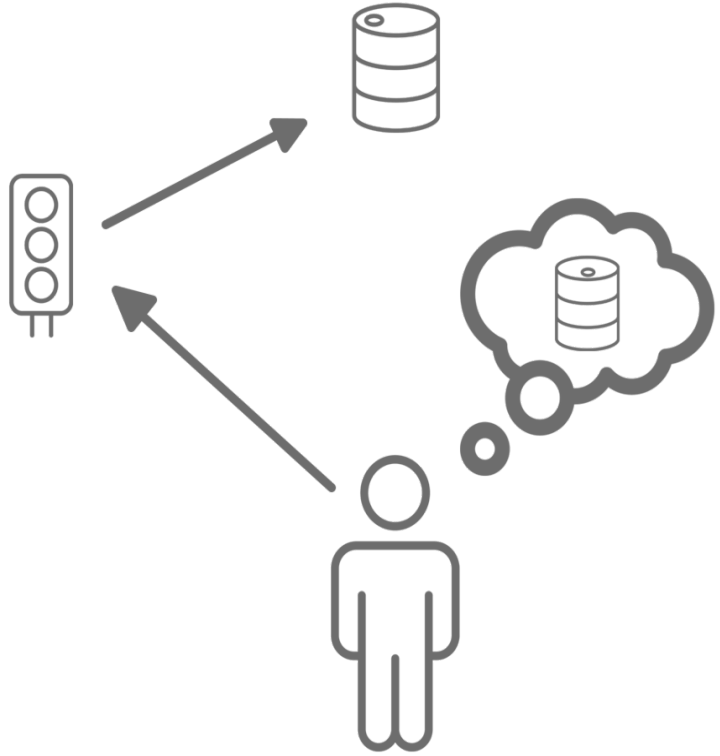
Ying Zhang,
Rafa Bidarra

VR/AR in Education

Perspective Taking

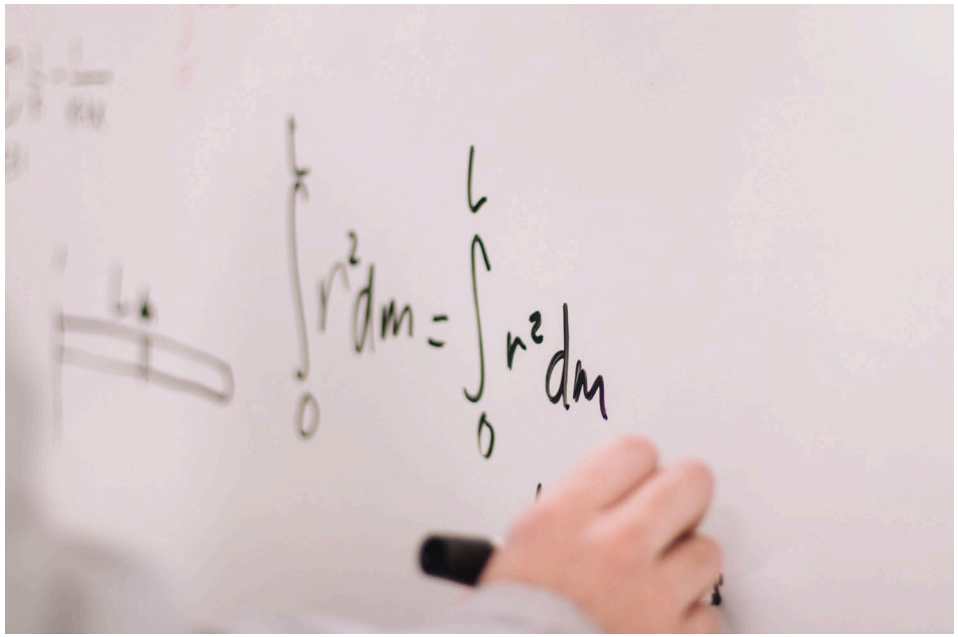


Egocentric



Allocentric

How to train perspective taking skills?



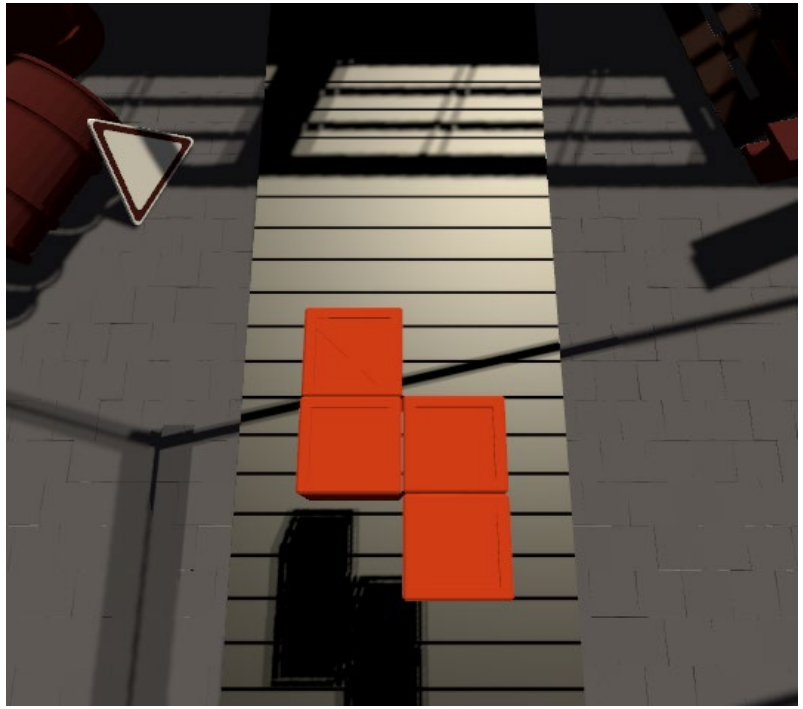
Serious Games

Mental Rotation

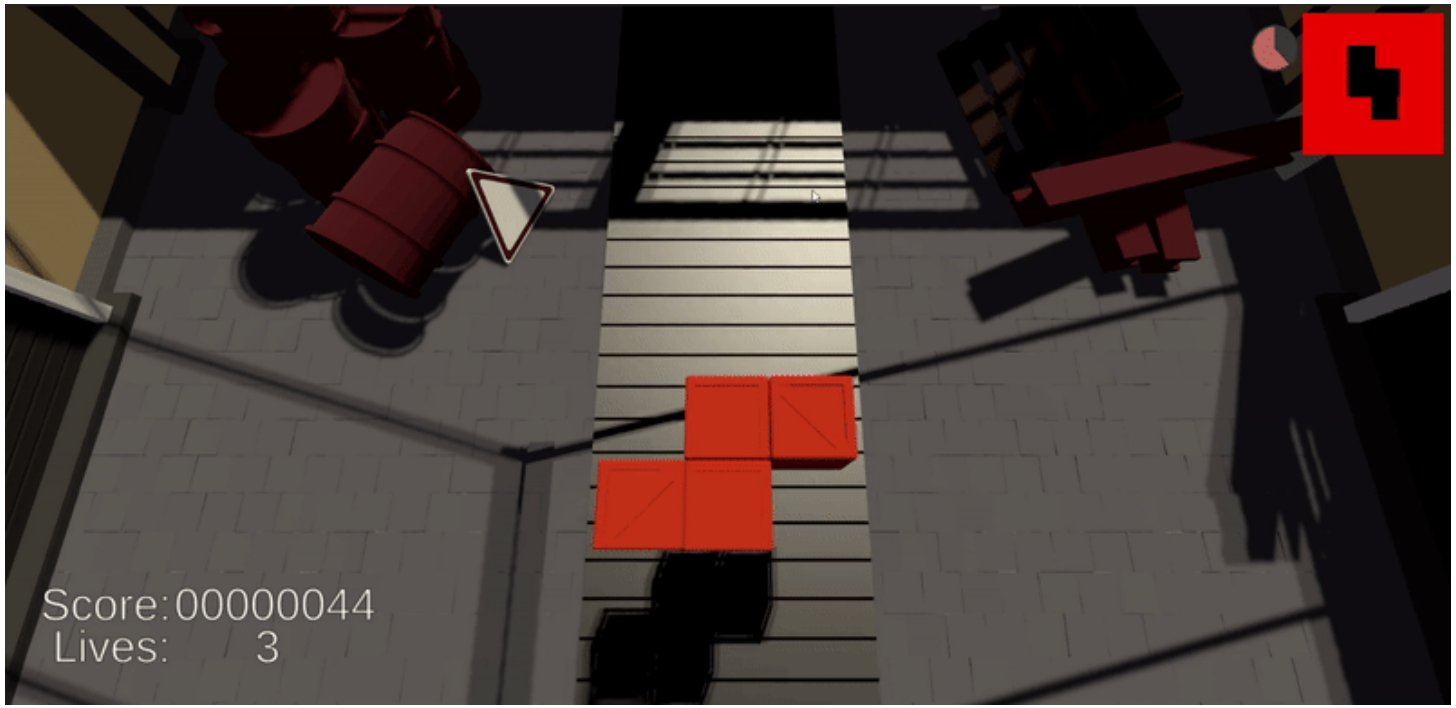
Spatial Navigation

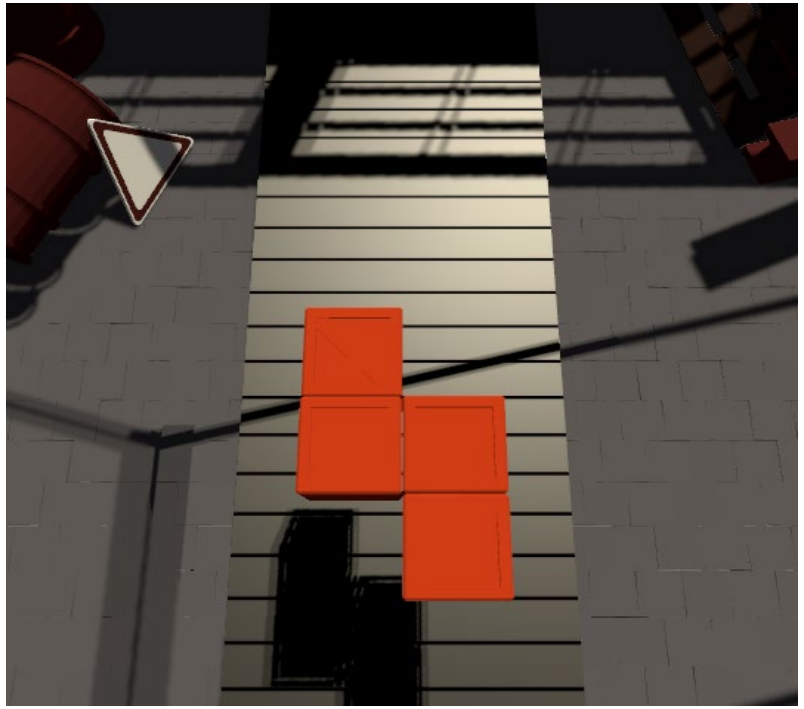
Spatial Awareness

A Hole New Perspective



A Hole New Perspective

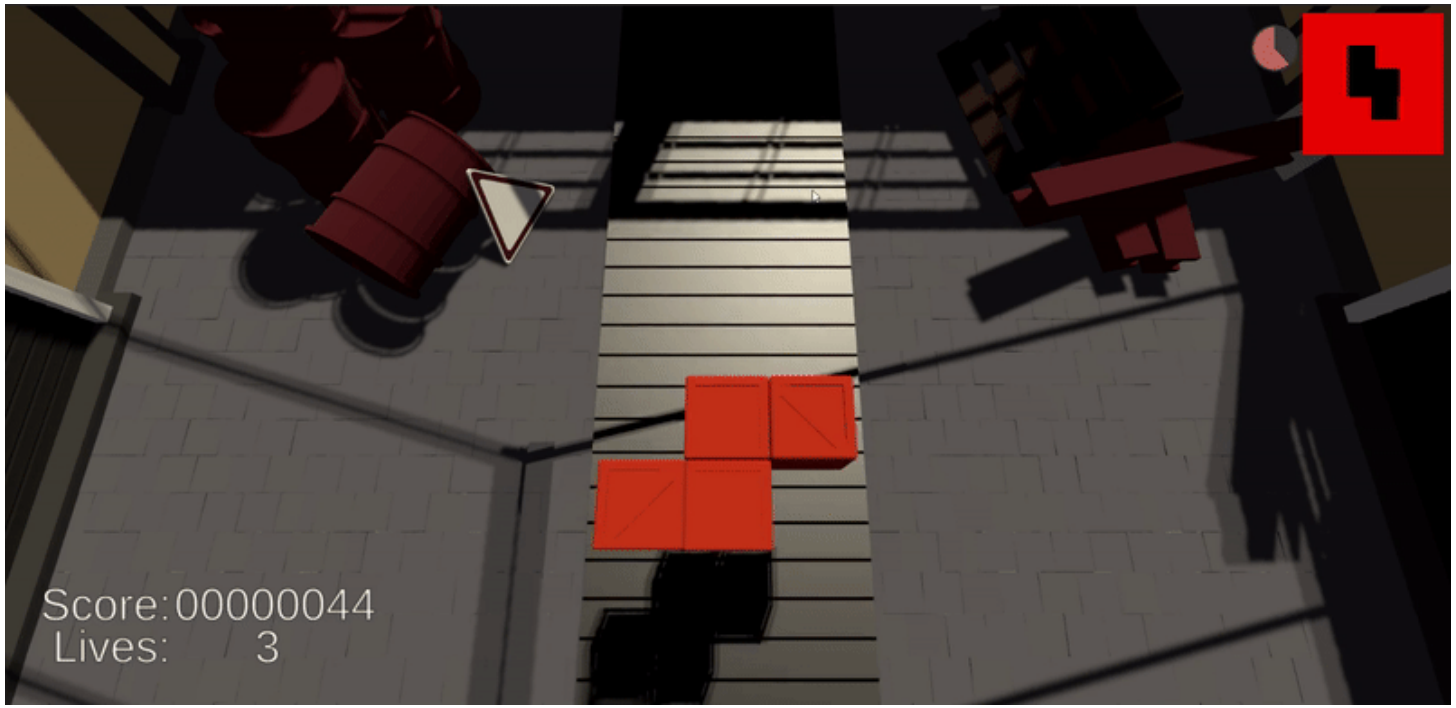


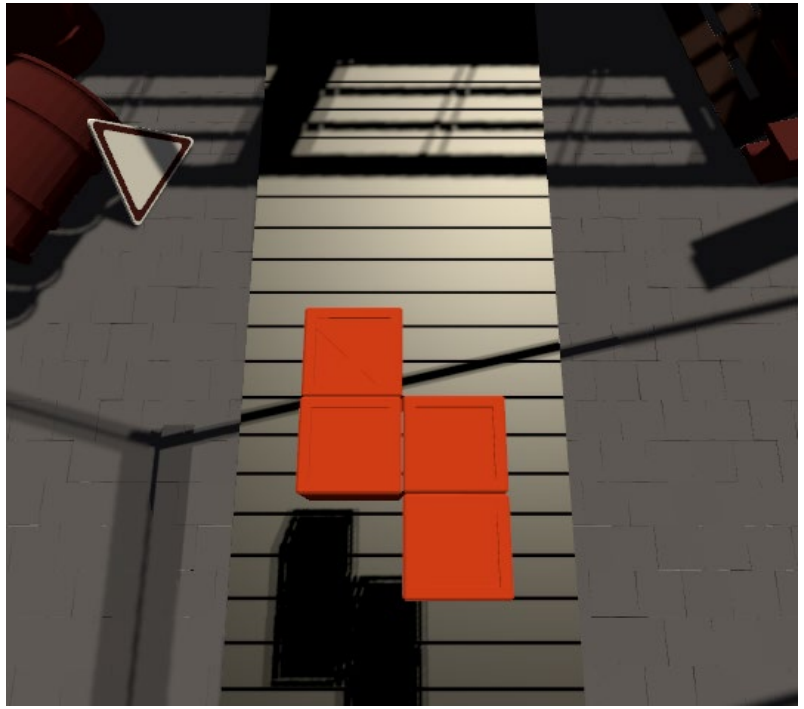


Core Mechanics:

- Moving Wall
- Rotate Object

A Hole New Perspective

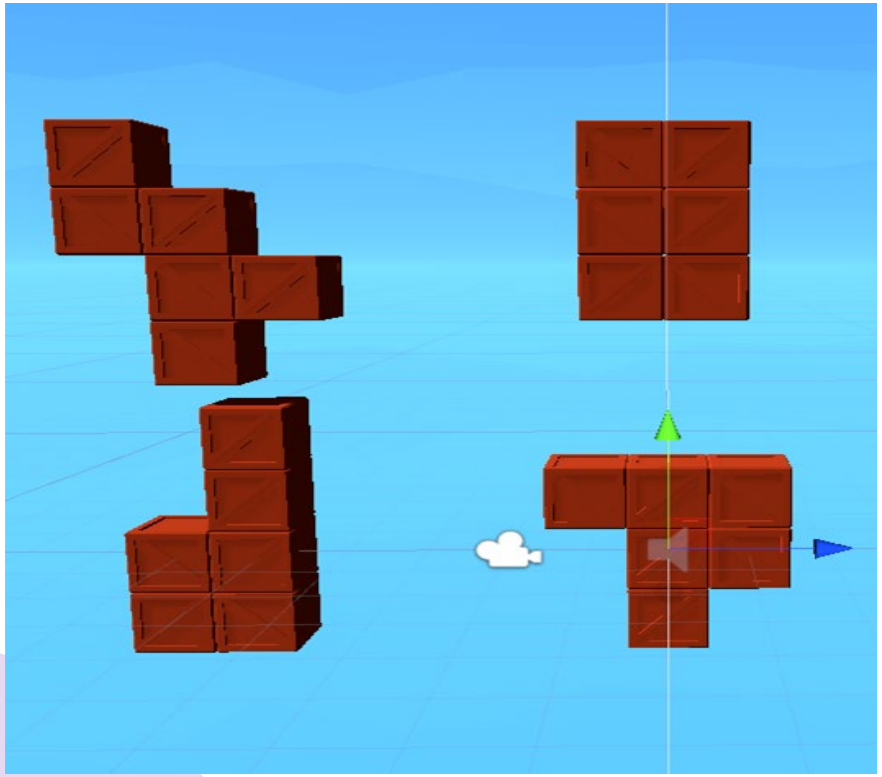


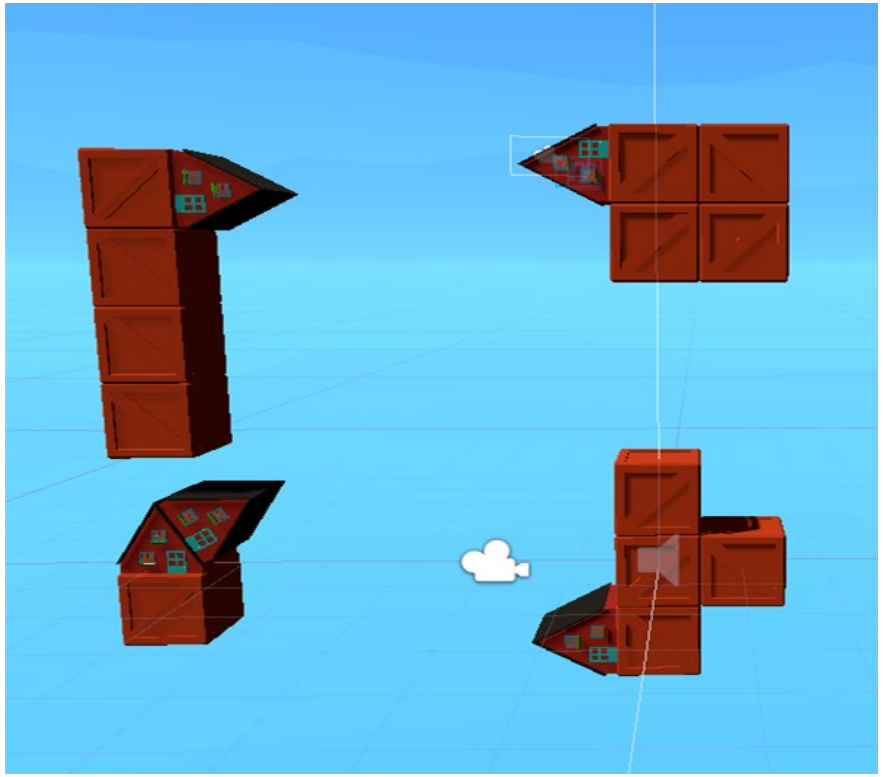


Core Mechanics:
- Moving Wall
- Rotate Object

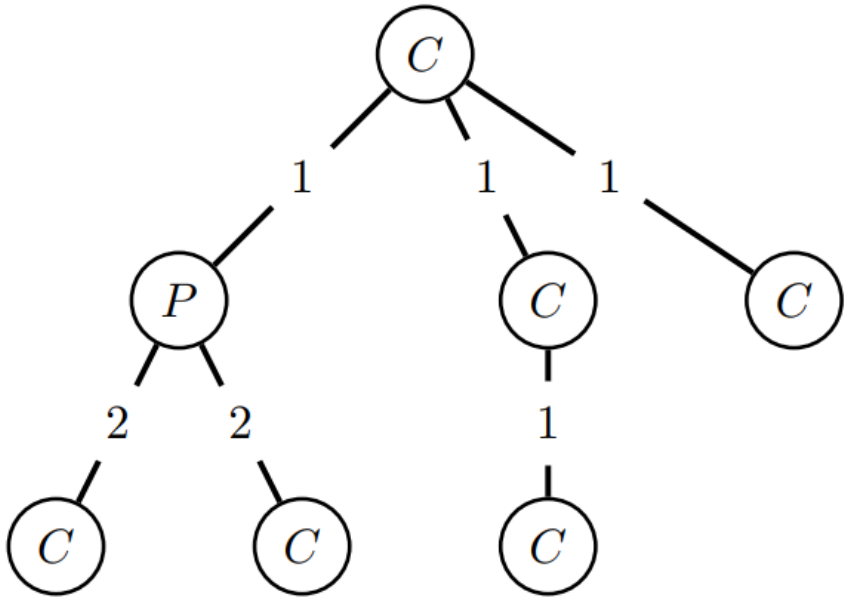
Challenges:
- Gradual Difficulty Increase
- Preventing Memorization

Procedural Object Generation

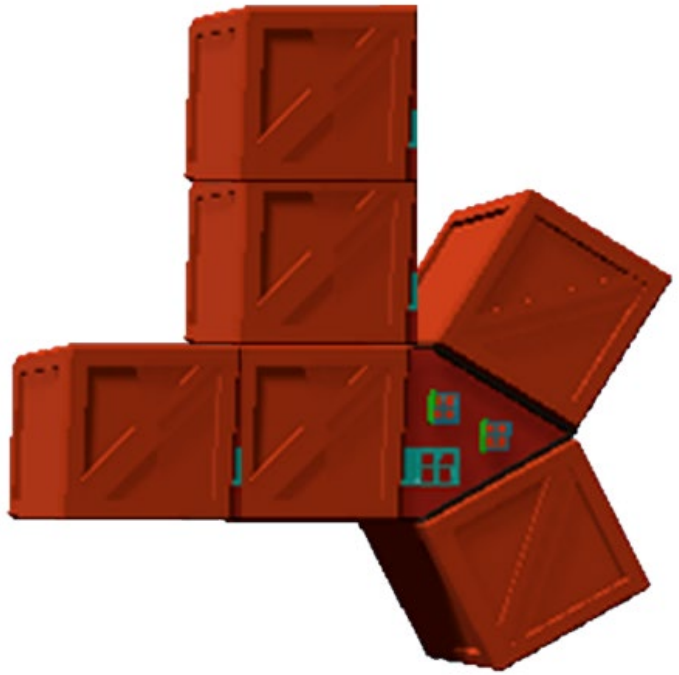




PCA: Algorithm

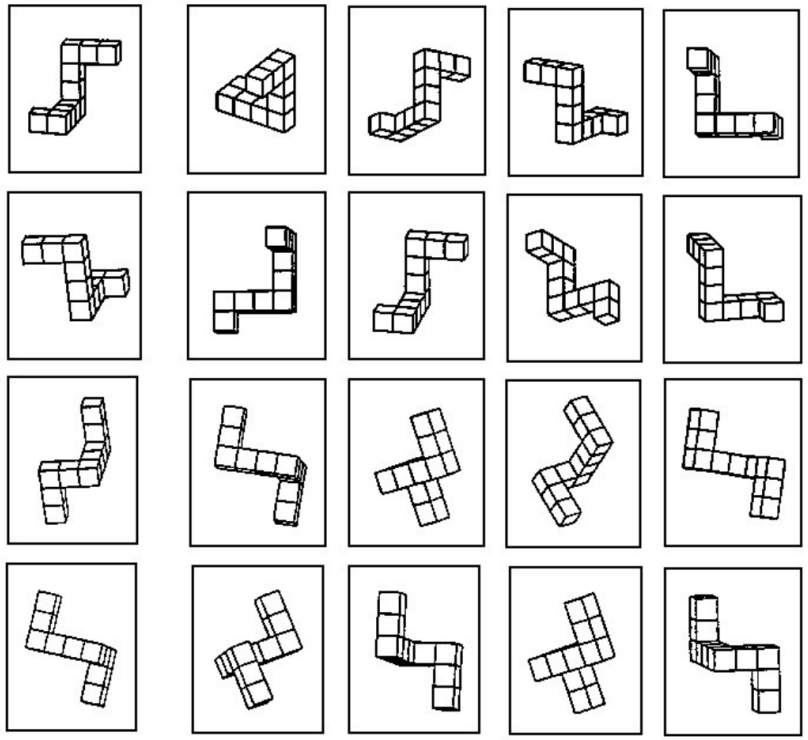


Tree Representation

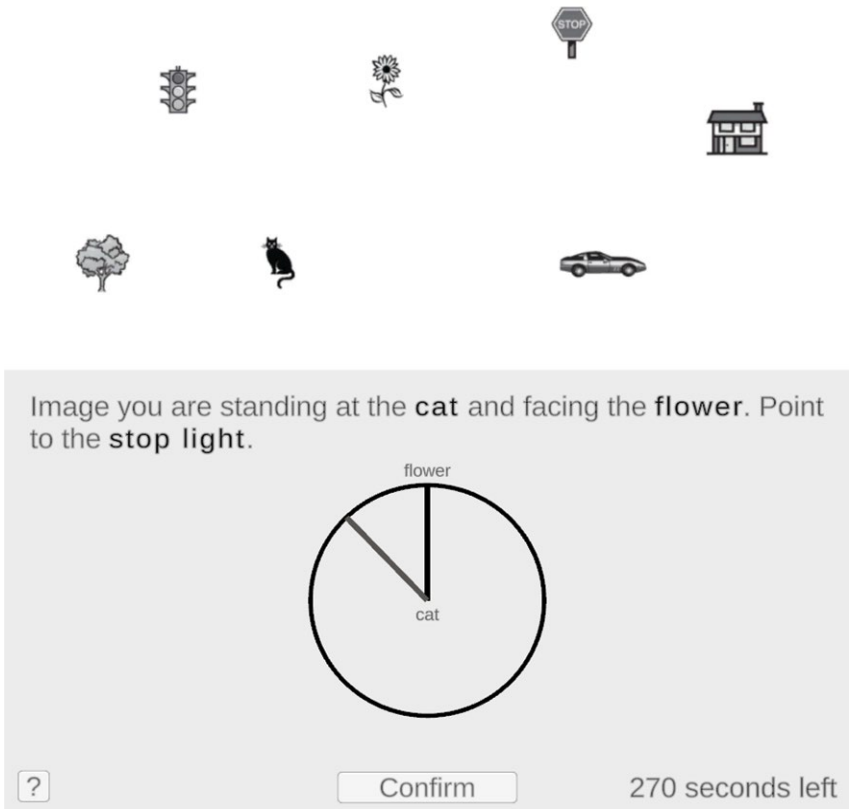


Actual Object

Evaluation



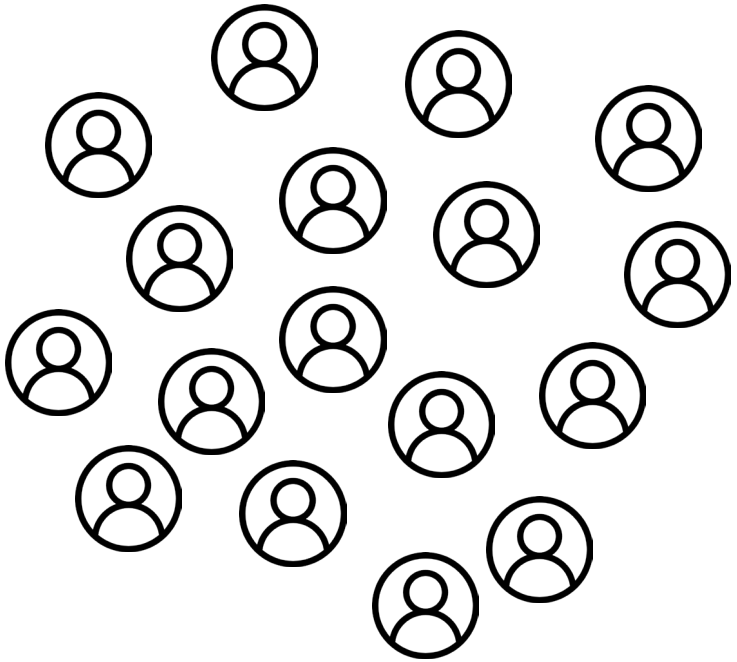
Mental Rotation



Perspective Taking

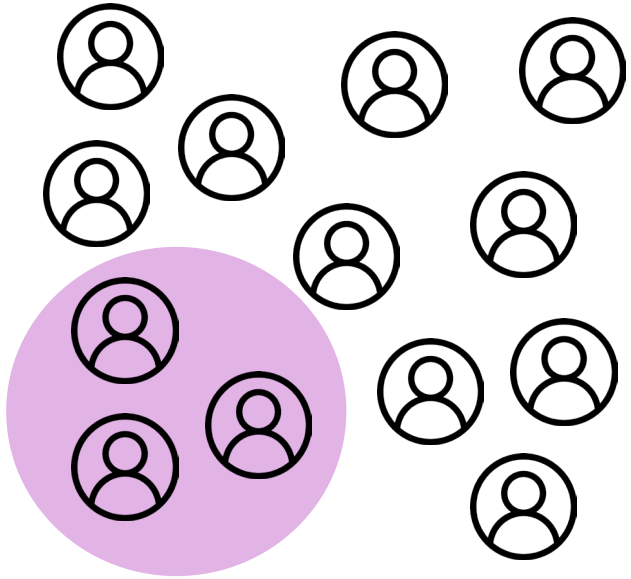
Results

+0.71 in Mental Rotation
+0.41 in Perspective Taking



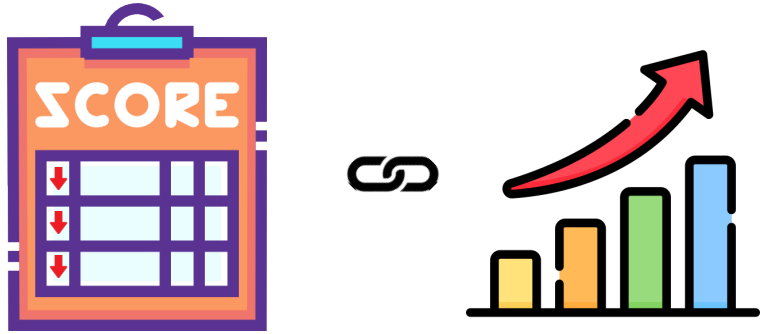
+0.73 in Mental Rotation
+0.73 in Perspective Taking

Limitations



Other Observations

High pre-game scores correlated with highest level achieved



Highest change in score for low scoring participants

Training and assessing perspective taking

through serious gaming

Ying Zhang,
Rafa Bidarra