# VirtualTable: a projection augmented reality game

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Introduction

VirtualTable is a projection augmented reality installation where users are engaged in an interactive tower defense game. The installation attracts people to a table, which the game is projected onto. Any number of players can join the game for an optional period of time. The goal is to prevent the virtual stylized soot balls, spawning on one side of the table, from reaching the goal. The players can place any kind of object on the table, that then will become part of the game. Depending on the object, it will become either a wall, an obstacle for the soot balls, or a tower, that eliminates them within a physical range. The number of enemies is dependent on the number of objects in the field, forcing the players to use strategy and collaboration and not the sheer number of objects to win the game.
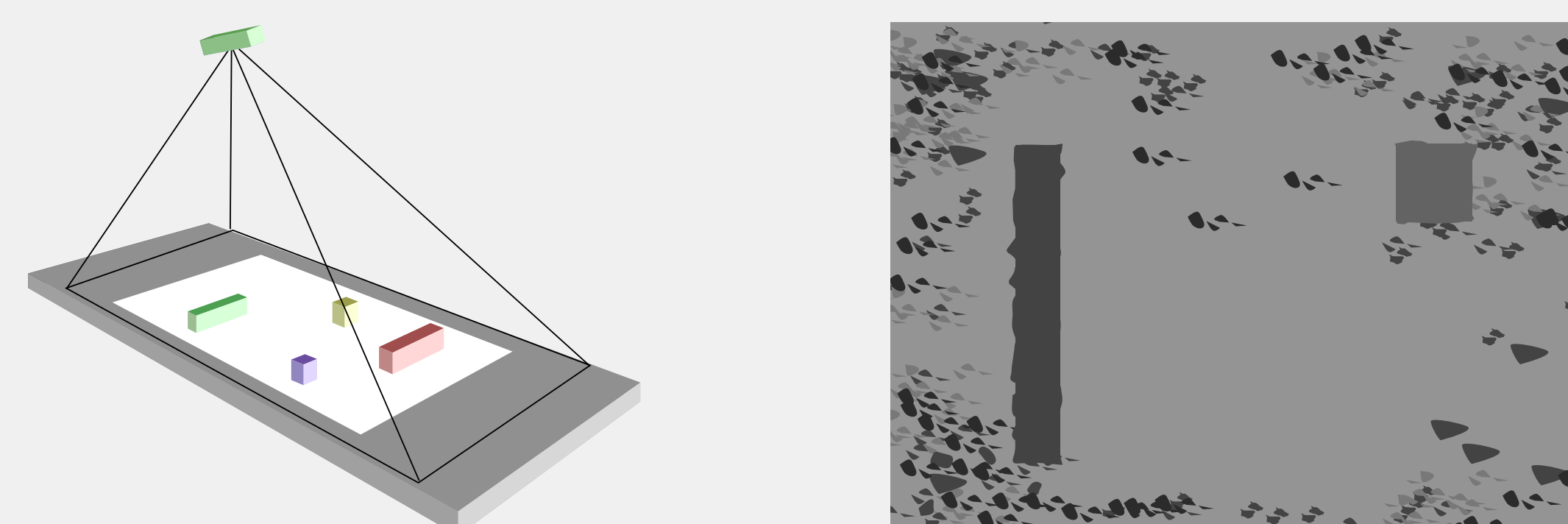
Setup

- Projector
- Microsoft Kinect
- Objects (tangible)
- Soot balls (projected)
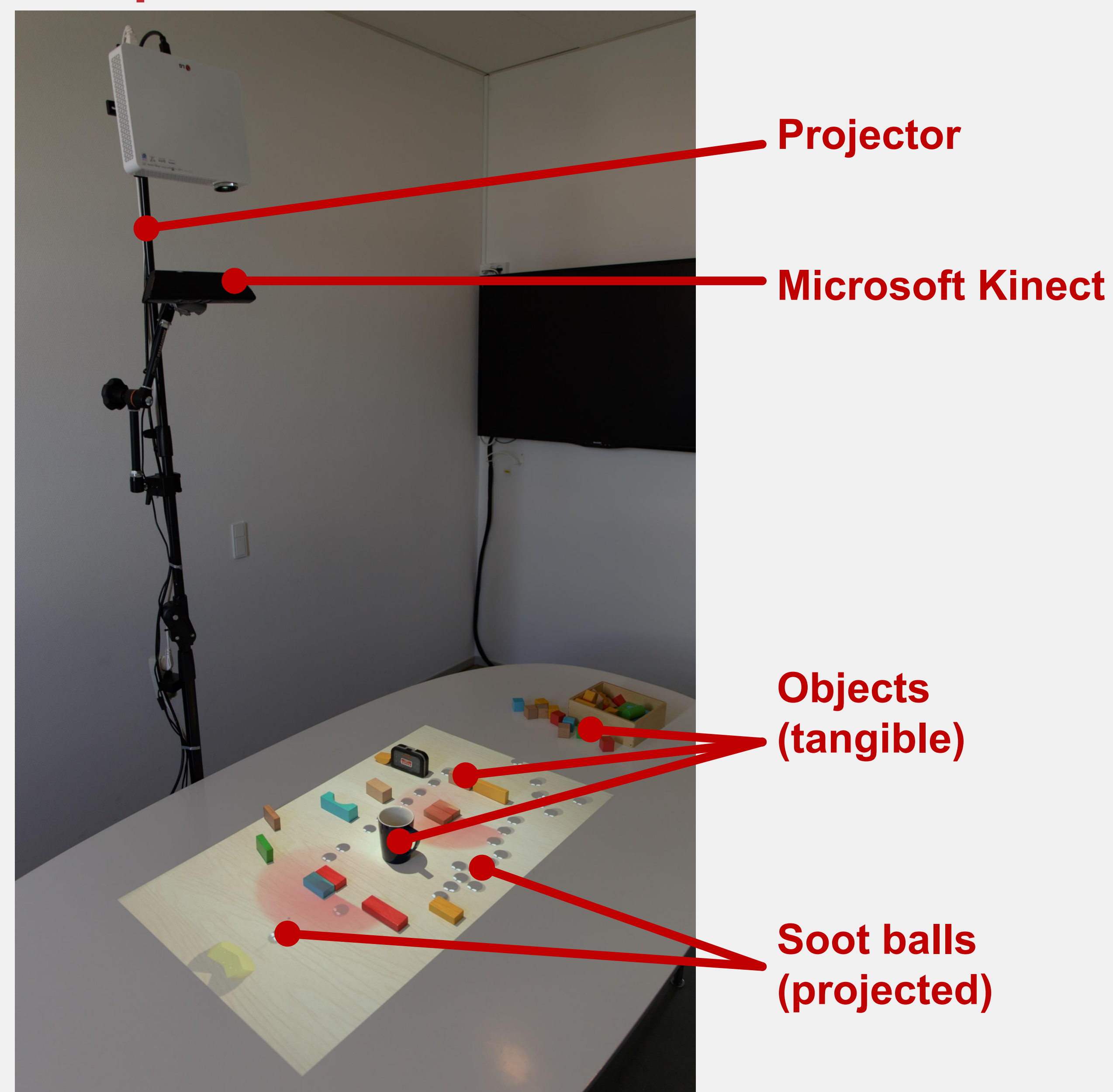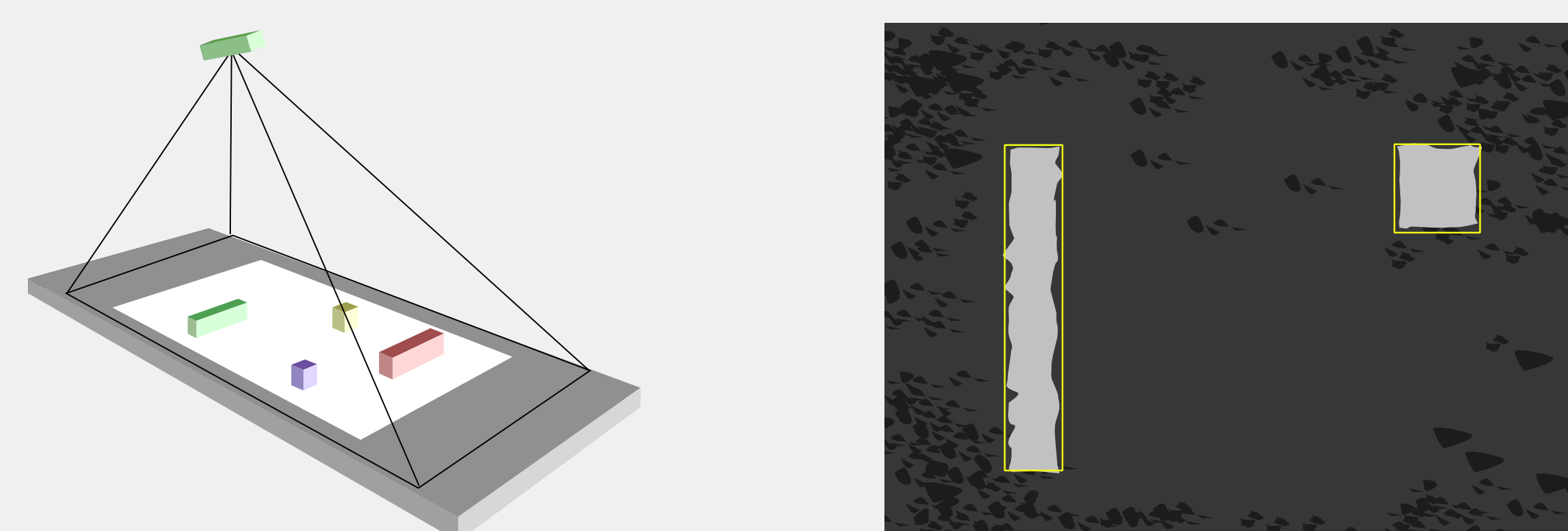
Process

1- Calibrate homography between camera and Microsoft Kinect
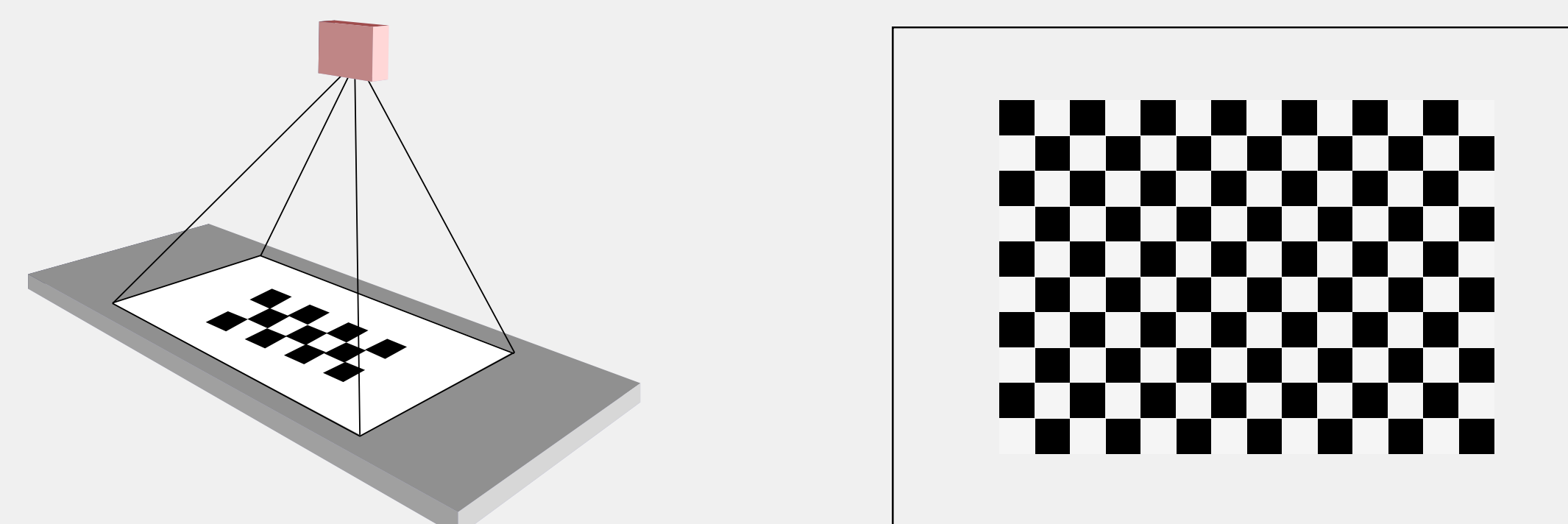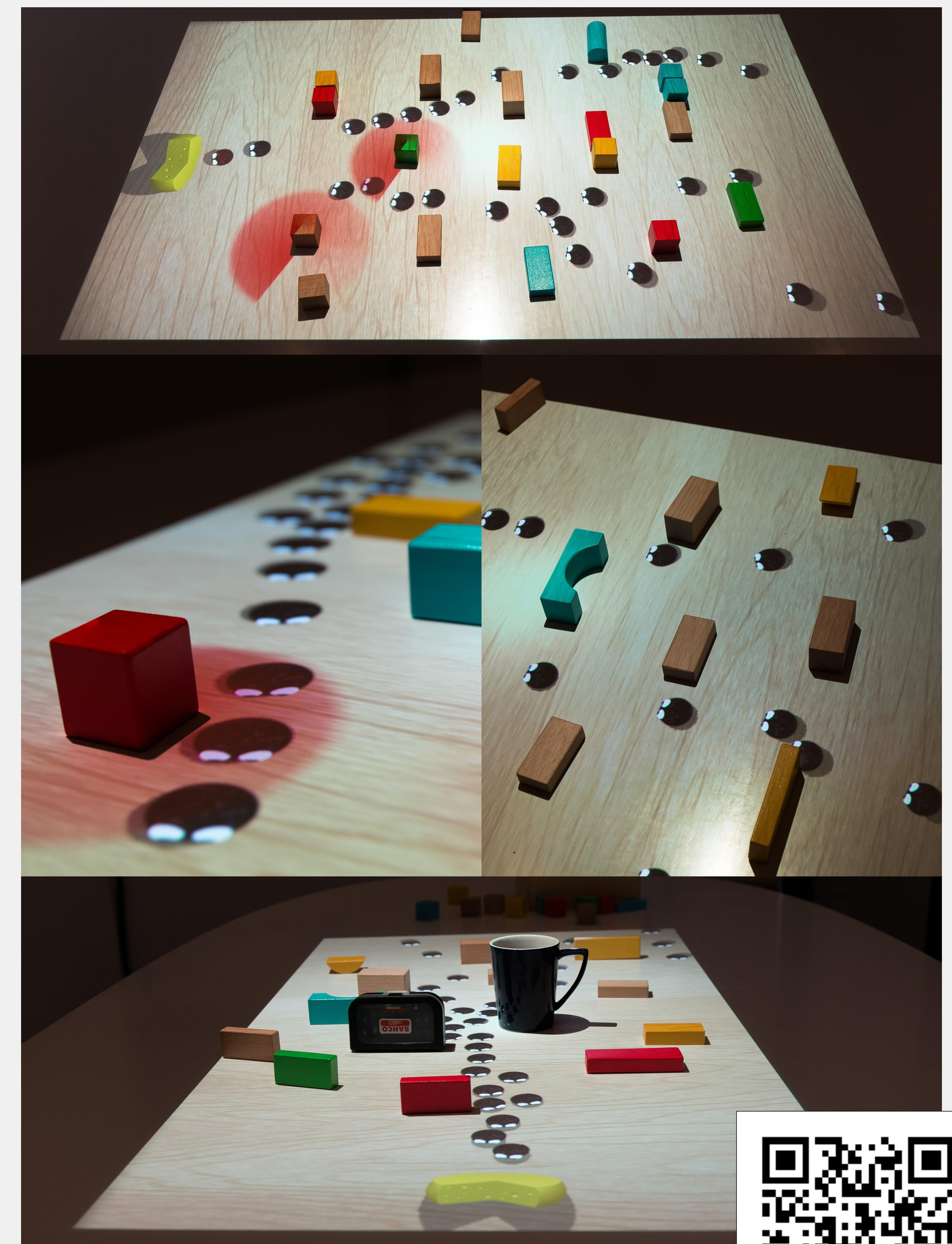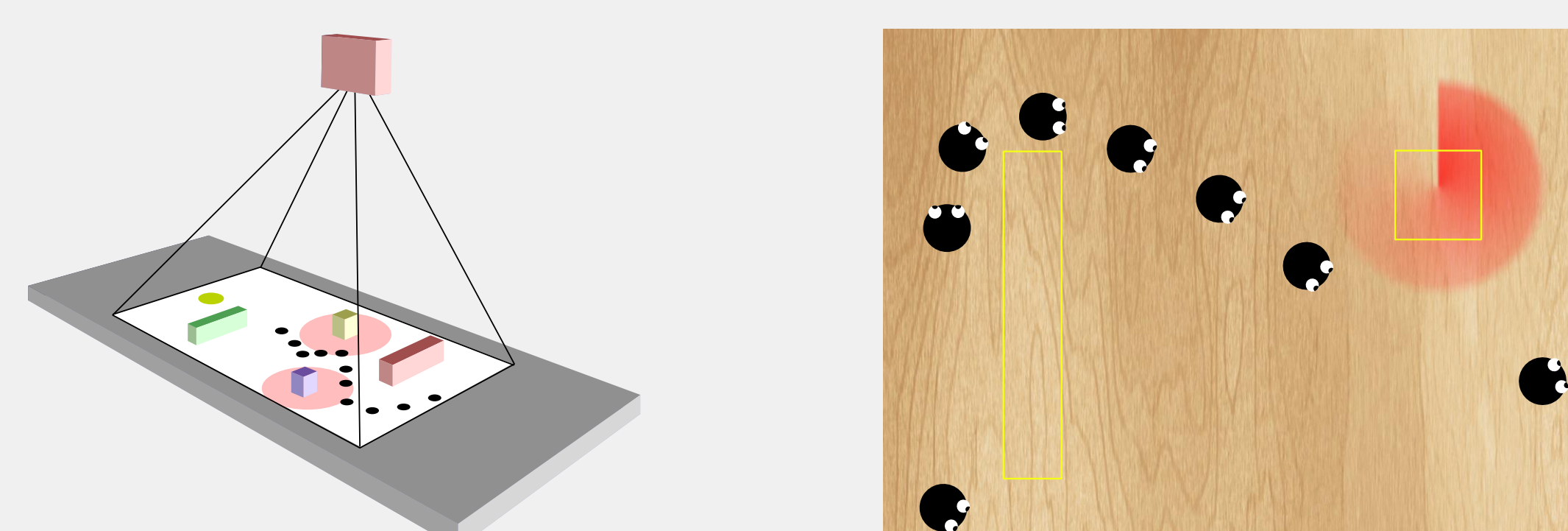

2- Read depth data from Microsoft Kinect

3 – Noise reduction and feature extraction

4 – Result passed to the game and re-projected onto the field

Conclusion

We believe that *VirtualTable*, with its combination of tangibles and interaction design that can be learned by exploration, is an excellent concept for development of immersive and engaging learning games for children.

Video: