

# Unity-based Multi-User Game Implementation for Cellulo-Rehabilitation

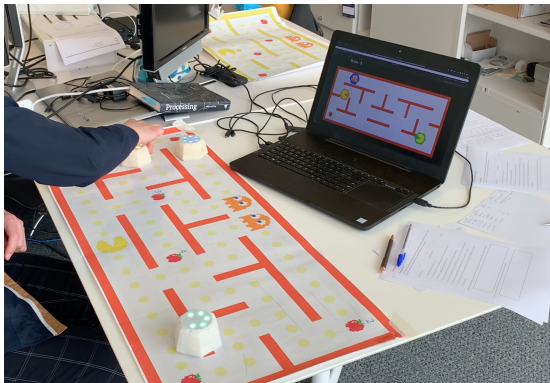
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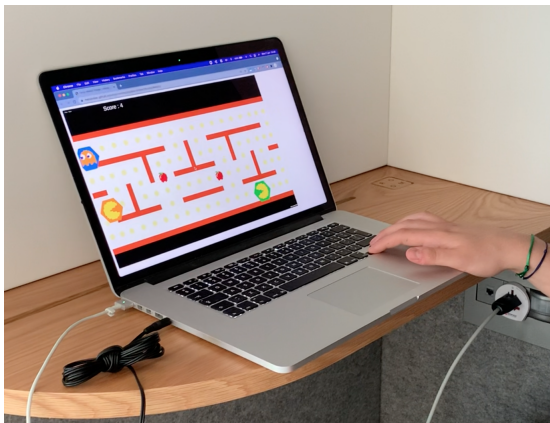
## MOTIVATION

The motivation behind this project was to create an online 2 player Cellulo Pac-Man game that would be suitable for the Covid-19 situation. The goal would be to provide a gamified, social and interactive rehabilitation experience.

Local player



Remote player



## METHODS

The bulk of the work in the project consisted of expanding on the previous Cellulo-Online-Photon project that provided a basis for online games using Cellulo robots. A large emphasis was placed on abstraction and modularity. The game has competitive and collaborative modes and includes autonomous AI chasing.

A notable achievement was a CelluloEntity class that allowed development and testing of the game with virtual Cellulo robots. Once the game was developed in such a virtual mode, real Cellulo could then be used. This significantly improved the development workflow and should be useful in future projects of this kind.

## RESULTS

A pilot testing experiment was conducted at the end of the project with 10 volunteers. We received excellent feedback as users found the game particularly intuitive and natural to play and had good fun playing with their friends. All participants found that the game could be used for rehabilitation purposes and would be effective in that role. There is still much room for expansion and improvements. Such as reducing lag, further improving gameplay and much much more.