Augmented Multi-Player Card Game

What about a card game without physical cards? The solution of this Bachelor Thesis projects the gaming table on a real table while the secret hand cards are on the player's mobile phone or tablet. Furthermore, the player can also directly interact with the table by making hand gestures thanks to hand tracking.

Introduction

Learning or teaching a new card game can be complicated. Asking questions all the time is essential but a frustrating experience for other players. This Augmented Card Game tries to address these issues.

A computer game based approach can simplify multiple aspects in a card game: Which cards am I allowed to play, which options do I have, when is my turn, and how many life points do I have left? In the Augmented Card Game, only permitted game moves are executable and tasks like counting life points are done automatically.

Goals

The major goal was to create an augmented game prototype of the card game "Bang!" by daVinci Games, which guides the players through the game.
The aim was a system, in which the gaming table – rendered as a Unity game – is projected onto a real table and the hand cards are shown in an app on the player's cellphone or tablet.
The developed system takes over tasks from the players which don't require any decisions from them and displays information about the game and their handcards for the player who has asked for it. Furthermore, players that aren't at the same location as the others are also enabled to join the game via the developed app.

Prototype

The components of this system are distributed on three hardware types:
– The projected game made with unity and a hand tracking service are running on a pc.
– The hand cards are shown in a mobile app created with Flutter.
– Some other services like the database, authentication, and NodeJS services which are used for the joining process are running in the cloud or on a server.
In the beginning of a game session, all players can join the game by scanning the projected QR code or by entering the displayed number. Then, the administrator starts the game, which then automatically distributes roles, life points, and cards.
The player whose turn it is can play cards by clicking on them on his/her mobile device. Some cards require an interaction like selecting another player. This can be done by pointing your own real hand to the player you want to select. Hand recognition is done with the machine learning solution MediaPipe by Google.
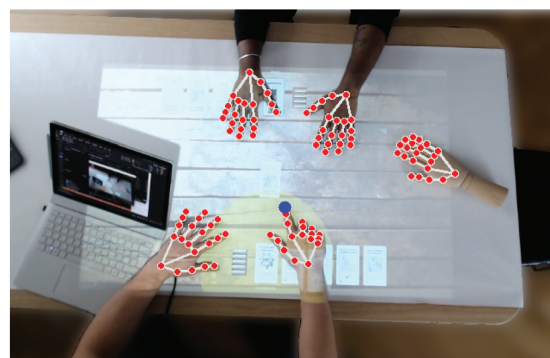
Conclusion

The idea of the developed prototype offers new opportunities how people could play card games together and it could bring much more variety into the game!

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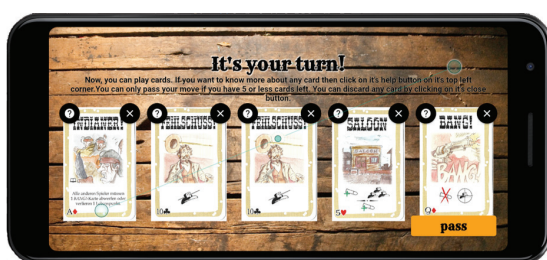
Your hand cards are on your mobile device.

Sometimes, you must select another player or a card on the table. Just point on it on the table!