PINS: A Prototype Model Towards the Definition of Surface Games

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1. Surface Games

2. PINS

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1. Surface Games

−a field within tangible gaming
−extend traditional board game by being played on interactive tangible surfaces

Board Games vs. Computer Games vs. Pervasive Games

- Board Games − use simple symbolic pieces (e.g. Go, Oware)
  − use iconic pieces (e.g. Chess)
- Computer Games − use mouse & keyboards
- Pervasive Games − use tangible interfaces (e.g. Audiopad, Pico, TViews)

Tangible Gaming

- Combine multi-touch and object-recognition
- E.g. Entertaible − LCD-based multitouch-tangible platform for digital board games
- E.g Reactable − collaborative electronic music game using computer vision technology

1. Surface Games

–a class of **computer games** played with **tangible playing pieces** on an **interactive surface**

Surface as referee & fluid interaction

- Interactive surface acting as referee
- Reactive game play surface
- Increase flow and fluid interaction

Relative environments

- Use open playing areas (dynamic characteristics)
- Proximity and orientation
- Physical object acts as relative indicators of the entire game states

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1. Surface Games

–a class of computer games played with tangible objects on an interactive surface

Physicality & game balance

- Simultaneous physical game dynamics
- Multi-handed interaction
- Manipulation and balance of playing pieces beyond traditional board games

Tangible playware & surfaces

- Bridge real-world interaction with computer games
- Compose of tangible playing pieces and interactive surface
- E.g. Emancipated Pixels – wall surface tracking and mediating the game
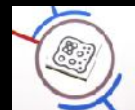
2. PINS
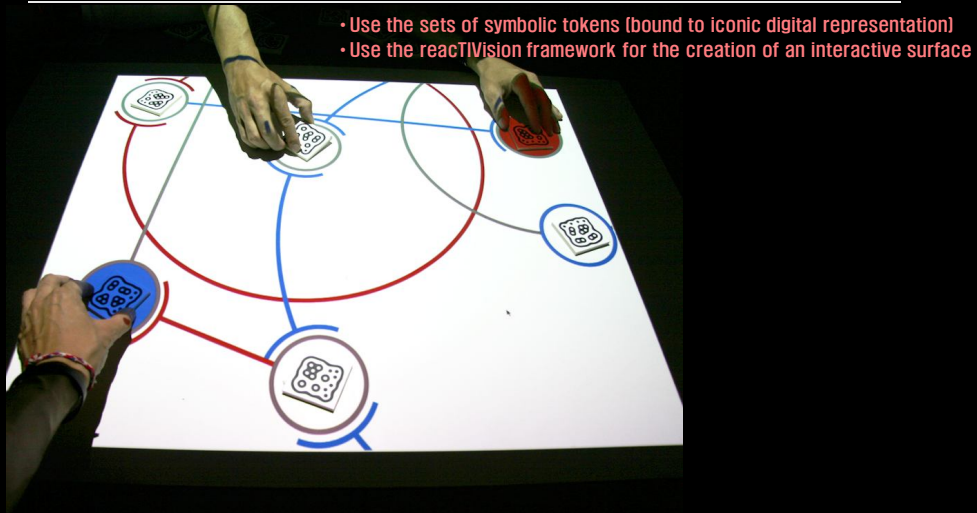
- Use the sets of symbolic tokens (bound to iconic digital representation)
- Use the reacTIVision framework for the creation of an interactive surface

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2. PINS

-Designed for a multitouch-tangible surface
-Iconic nature of a piece is determined in real-time
-State of playing pieces can change throughout the game

Interaction & representation

- Symbolic Tokens (Physical representation)
  – PINS의 play piece은 아크릴 재질의 fiducial marker방식

- Game Piece Types (Digital representation)
  – Circle: physical token 주변에 원모양 생성, token을 돌리면 반지름이 커지거나 작아짐
  – Line: physical token에서 하나의 선모양 생성, token을 돌리면 선의 방향이 바뀌어짐
              선의 길이는 테이블 끝까지이거나 또는 상대방편의 token과 intersect한 지점까지

- Defining Game Pieces (by touch interaction)
  – Game surface에 처음 token을 넣으면, circle/line인지와 어떤 player에 속하는지를 지정해야 함
  – Player의 소속 지정: 두 손으로 token을 터치한 후에 player쪽으로 드래그하는 모션을 취하면 됨
  – Circle 지정: token을 터치한 후에 원모양의 모션
  – Line 지정: token을 터치한 후에 한 손으로 드래그하는 모션을 취하면 line으로 됨

2. PINS

-**Gameplay:** 플레이어는 상대방의 **play piece**를 더 이상 움직이지 못하게 **pin**(즉 trap)하는 것

Game Piece States

•Active state – 활성화된 상태 (아직 상대방 편에 의해 inactive 되지 않은 살아있는 상태)
　　　　　　　아무 방향으로 움직일 수 있음
•Held state – 원 안에 들어오게 되면 held 상태로 더 이상 token을 translate 또는 rotate 할 수 없음
　　　　　　　그러나 상대편에 영향은 줄 수 있음
•Inactive state – 상대편 선과 intersect되면 inactive 상태로 되며 움직이거나 상대편에 영향을 줄 수 없음
•Terminated state – inactive 상태에서 상대편의 다른 선과 함께 intersect되면 terminate 상태로 됨