# AR Tower Defense

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What is Tower Defense?

1. Playing field with an entrance A and an exit B
2. Monsters want to go from A to B -> you lose if they reach B
3. You place towers on the field which **attack** monsters & **direct** them away from B so their way is longer
4. If all monsters get killed before they reach B -> you **win**

Screenshot of a popular Tower Defense implementation

Start
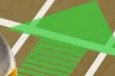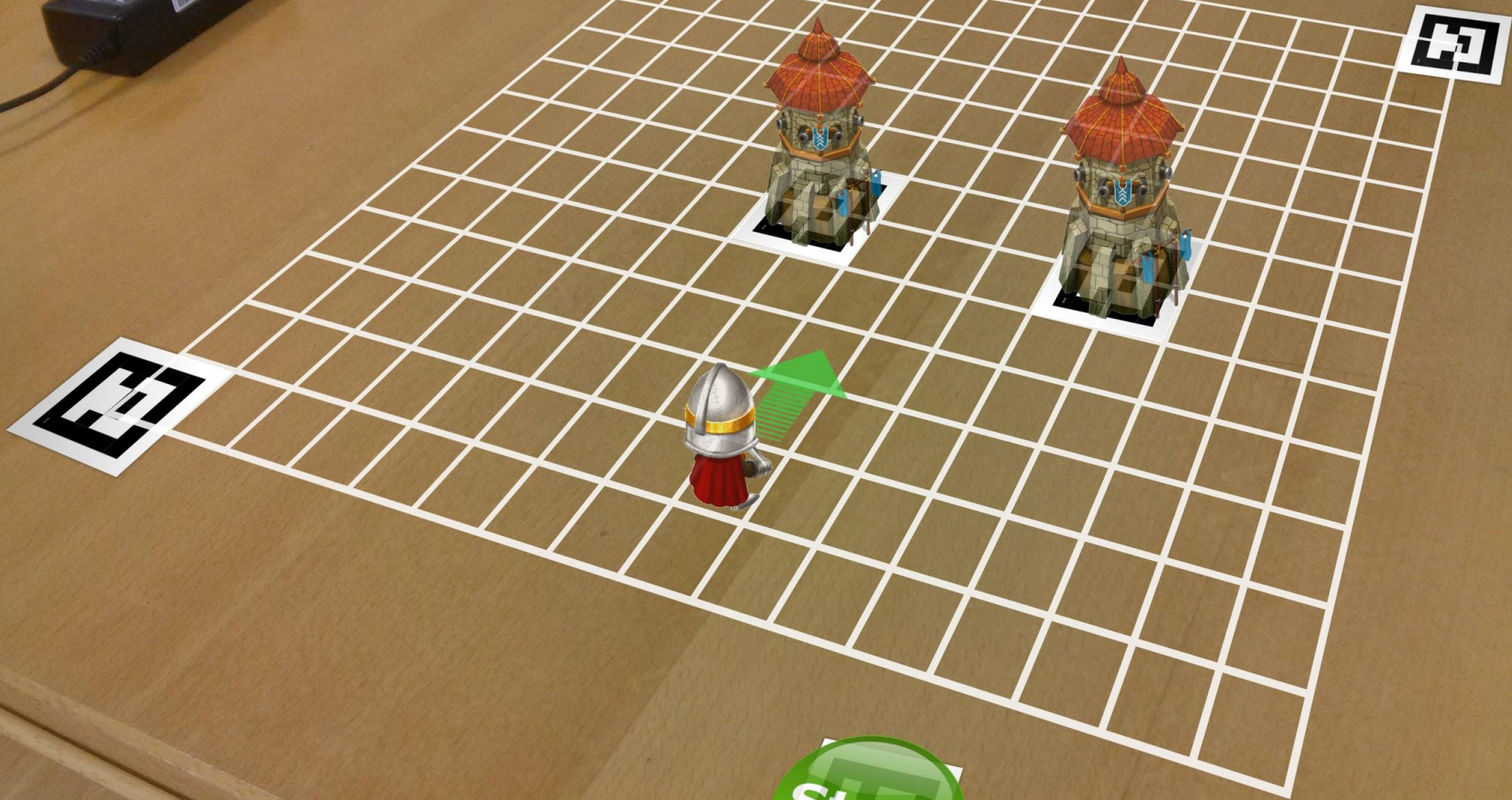
Game Loop

1. Detect the game table (tagged with markers in each corner)
2. Transform the real 3D game table into our 2D field
3. Computer Vision
   a. Detect all tower markers
   b. Put them into our 2D playing field
4. Game Logic
   a. Calculate next position of monster (find optimal path on playing field)
   b. Calculate new life points of monster
5. Rendering
   a. Put monster and towers on the playing field
   b. Transform objects on playing field to 3D
   c. Display objects

Possible Additions

Basis: Only one monster, loses life when near towers

Possible additions, if there is time left:

- Cope with the case that the towers are moved by the player after placement
- Many monsters and monster waves
- Introduce money -> each tower placement costs money
- Different towers with different strengths
- Shooting animations

Thanks :-)