Introduction to videogames

Videogames Technology
Asignatura transversal

Departamento de Automática

Universidad de Alcalá

Objectives

- Contextualize game development
- Introduce basic vocabulary

Bibliography

1. *Desarrollo de Videojuegos, Arquitectura del Motor de Videojuegos*. UCLM.

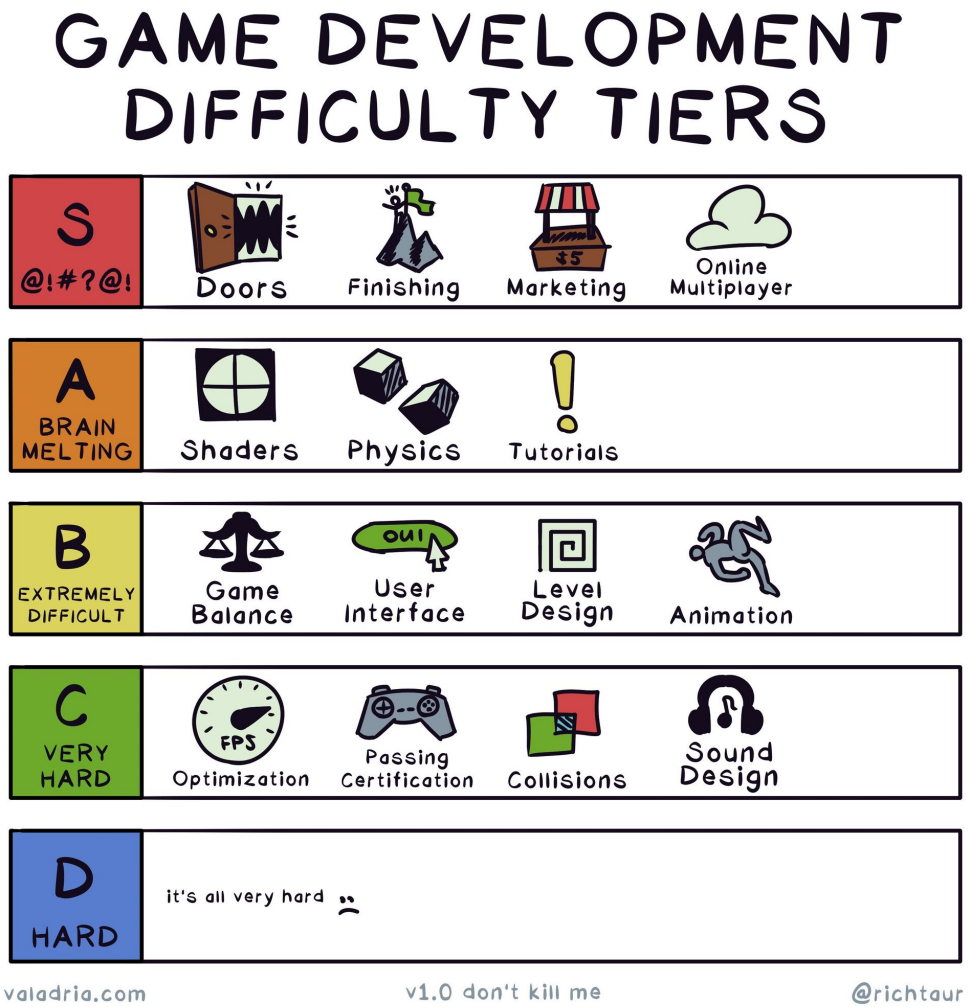
Table of Contents

Motivation (I)

Why videogames?

- They involve all the Computer Science disciplines
- Exciting problems from an intelectual perspective
- Benchmark for AI
- Career opportunities
- They are fun!

Motivation (II)



Definition (I)

Vallejo

A videogame is a *graphical application* in *real-time* with an *interaction* between the user and the game

Real-time: **In this context**, it means the need of generating a frame rate

Interaction: Joystick, keyboard, mouse, body, ...

Definition (II)

Alternative definitions:

- A *play activity* with *rules* that involves *conflict* (I. Scheiber)
- A game has "ends and means": an *objective*, an *outcome*, and a *set of rules* to get there (D. Parlett)
- A game is an activity involving *player decisions*, seeking *objectives* within a "limiting context" (i.e. *rules*) (C. Abt)

> Game rule = game mechanic

Why a videogame is fun?

- Highly recommended reading: Raph Koster. A Theory of Fun. O'Really, 2nd edition. 2014.

Definition (III)

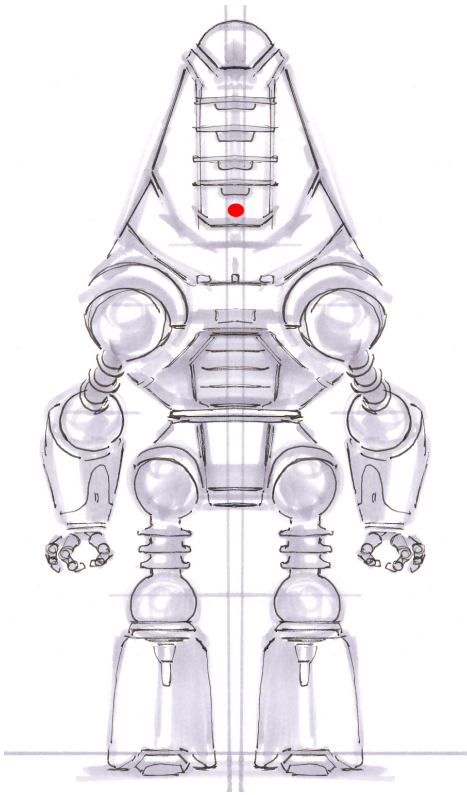
A personal perspective

Videogame = Video + game

Definition (IV)

Elements to take into account

- Story (characters, goals, dialogs, etc)
- Graphics (3D models, animations, videos, etc)
- Sound (Music, sound effects, voice, etc)
- Logic (mechanics, programming, etc)
- Interface (HUD, user interface, etc)
- Gameplay
- Physics



Videogames development (I)

Technical topics involved in videogames development

- Personal computers
- Microprocessors development
- Peripherals (specific for videogames)
- 3D technology
- GPUs
- Computer graphics
- Internet
- Networks
- Videogames engine development
- Physics engines
- Graphical engines
- Software engineering
- Artificial Intelligence (AI)

Videogames development (II)

Other topics involved in videogames development:

- Human-machine interfaces
- Social networks
- Mobile technologies
- Tablets
- Cell phones
- Virtual Reality
- Augmented Reality
- Marketing

Industry (I)

Industry involves

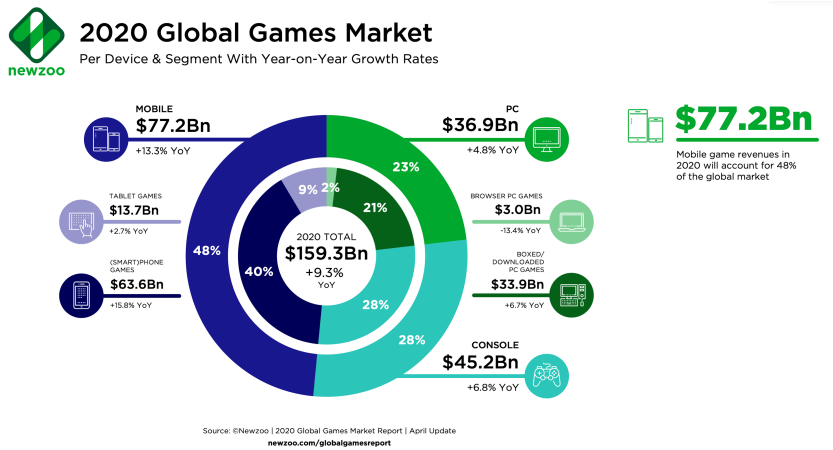
- Development, distribution, marketing and sales
- Software and hardware

Videogames generates more business than movies and music

- 57,6 billion euros in 2009, 91 in 2016, 217 in 2022

Average videogame cost: 7.4 - 9.7M €

- Consolited franchises



Industry (II)

PCs decrease as consoles increase sales

- From mid 80's consoles are the main platform
- Then relegated by mobile devices in the 2010's

Best revenues are in software

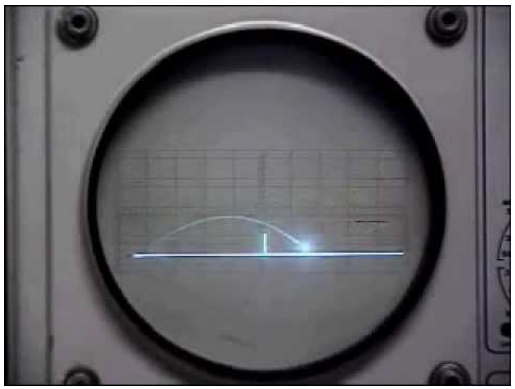
- Hardware sold at a loss

Overview of Videogames

History (I)

We can distinguish the following chronology

1. Videogames pre-history: Analogic hardware
2. 80's: 8 bits. (Spectrum), (Amstrad), ...
3. 90's: 16 bits. (Amiga), (Atari), Game Boy, ...
4. 2000 to now: 32/64 bits. PCs, consoles



Overview of Videogames

History (II)

Check out these videos:

- (Video past)
- (Video future)
- (Video suggested)