Training content JMIN

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Contenu pédagogique

La formation dispensée dans le cadre du master JMIN est considérée comme une spécialisation venant compléter une formation initiale ou des connaissances acquises dans la pratique professionnelle.

Elle s'adresse à des élèves ayant déjà un haut niveau de connaissances dans l'un des métiers de base nécessaire à la création d'un jeu ou de l'audiovisuel numérique.

Le semestre 1 est constitué d'enseignements issus d'un socle commun de connaissances pour les 6 parcours. L'objectif pédagogique est de permettre aux étudiant·e·s d'appréhender les contraintes des métiers des différents acteur·rice·s intervenant dans la réalisation d'un média interactif numérique.

Le semestre 2 est un semestre de spécialisationdans chacun des parcours (2 UE de spécialisation par parcours), avec la création d'une œuvre interactive jouable, dont les règles sont compréhensibles en une dizaine de minutes, préparée en équipe et présentée en fin d'année devant un jury mixte de professionnel·le·s et d'universitaires.

Le semestre 3 est organisé en séminaires d'approfondissementpar parcours et élaboration du projet d'équipe.

Le semestre 4 concerne essentiellementl'évaluation du projet et un stage de professionnalisation d'un minimum de 4 mois et d'un maximum de 6 mois en entreprise ou en laboratoire de recherche (entre le 1er avril et le 30 septembre)

Specialities of master JMIN

Game Design

The Game Designer

The Game Designer determines the concept of the game, ensures the coherence of its different elements and above all guarantees its playability.

In the proposal phase, the game designer brainstorms with the heads of each area of activity and the publisher to arrive at a document, often called the 'pitch', which explains the objective of the game. The pitch identifies the target audience (from a hardcore teen gamer to the occasionally playing housewife…), the game type (FPS or simulation…), the platform (PC, PS3…), original game elements and above all addresses the vital question: why will it sell?

If the project enters the pre-production stage, the game designer defines every element of the game: the world, the map, the storyline, objects and characters and most importantly, gameplay. In fact, the game designer's obsession is whether the player will have fun: what games does the player enjoy playing and what makes him/her want to continue playing? Each profession has a part to play and the Game Designer is there to make sure each individual contribution works with the rest.

In the production phase, the game designer steers and co-ordinates the activities of all the creative staff (level designers, graphic artists and sound designers). On the project manager's authority, he/she helps manage the production process. For more complex projects, the game designer can be assisted by specialists, for example in charge of dialogue or directing.

A game designer must be aware of every aspect to game development and the technical constraints which will condition his/her choices. In general, you do not start working in the videogame industry as a game designer, but in another profession, often as a level designer. After you have proved your inventiveness, you may get a shot at your dream job. Shigeru Miyamoto, the creator of 'Mario', originally trained as a graphic artist; Sid Meier, famous for 'Pirates' and 'Civilization' started out as a programmer.

Level Design

The level designer is in charge of creating each stage/level in the game and its scenario. Unlike a film scriptwriter, the level designer's narrative is not temporal, but in an environment. He/she has a 2D or 3D map of each level, with the objects/characters that have been identified during the design phase. The level designer has to place these objects on the map in accordance with the gameplay. He determines which path the player's avatar can follow and the various quests that need to be accomplished to finish the level. The key to level design is to construct a progressive degree of difficulty. The level designer must find the right balance so as not to discourage the player, but to make him/her feel they are accomplishing things in an adventure in which they are the heroes.

For example, the level designer could start by placing a terrifying monster (the boss) that has to be beaten to finish the level. The corridor leading to the boss is behind a locked door. You'll need to find the key, which is well-hidden and well-protected of course. If you want to stand a chance of defeating the monster, you'll need a magic sword and a healing potion. The potion can only be obtained if you have enough gold, but that's no problem, as to earn gold, you just have to kill lots of less powerful monsters (eg orks) dotted around the level.

Of course the player doesn't know which way to go. Finding one's way and solving the puzzles encountered en route is what makes a game entertaining, but as the level needs to be finished within a reasonable time limit, the designer can provide a sort of breadcrumb trail to keep the player on the right track. NPCs can provide information, or visual, textual and audio clues give tips about how to solve the quest and obtain objects you will need later in the level/game.

The level designer is in permanent contact with the rest of the team. The game designer sets out the guidelines, the graphic artist and the sound designer render the objects the level designer works with, and finally the programmers code the behaviour of each object. The game designer also provides an essential level design tool, the scripting language. It is this simple and game-related computer programming language that enables the level designer to code his/her scenario: "When the player enters the dungeon, all the monsters attack".

The level designer's basic tool is the level editor designed by the programmers. Many games (Half Life, Neverwinter Nights, Oblivion…) make their level editor freely available, so that a new episode can be created or even a completely different game.

Project Managers

Project managers guarantee that the project runs smoothly, both in terms of deadlines and budget.

They ensure that the team has the necessary means at its disposal to reach its objectives.

They are also managers in charge of making sure the team stays on schedule and have to communicate with their team and sort out any people problems.

Moreover, they are in the front line when it comes to communicating with publishers and manufacturers.

Project managers need to be very organised and to understand each step of the videogame development process.

The publishers, who produce, finance and commercialise a game, bring together several major sectors of activity in their organisations.

4 central activities

Professions in game publishing can be grouped into 4 central activities, each of which comprises different functions and roles.

Marketing includes product and community managers.

Admin and finance are in charge of all legal and accounting aspects.

Production includes producers (who follow each project), game testers, localizers, not forgetting webmasters.

Sales comprises the sales, distribution and business development teams. The latter work to develop new prospects for the company.

The professions haven't really changed much over the last ten years, but they are currently evolving very fast as digital distribution transforms the market.

Source: The French national videogame confederation's job description reference file – (SNJV) - 1st edition, October 2012.

Graphic Design

Careers in game art

A game's visual identity is a key element to its success. Jobs can be more or less specialised depending on the type and scale of the project in question, but there are always three main types of professionals working on graphic design, modelling and animation.

Graphic artists

Graphic artists intervene from the pre-production phase to design the characters and the environment. This task often relies on classic drawing skills and provides a precise idea of the game's imaginary world.

Modellers

Modelling involves transforming a 'drawn' object (characters, buildings, weapons…) into a computer-based graphic element which can be integrated into the game. This work exists in 2D games (designing sprites), but is particularly well-developed in 3D games for which modellers have to create nothing less than a 'digital sculpture' that represents the object as seen from every angle.

Animators

Animation in a game is the art of imagining the character's movement, as well as that of all other mobile objects and elements. Animation is therefore a very specific field of graphic design which requires the combined skills of a visual artist and a film director together with a keen awareness for movement.

Art directors

The art director defines and guides the aesthetic orientation of a game or interactive experience. He/she co-ordinates the work of a team made up of graphic artists, modellers and animators, making sure they work in compliance with the general artistic direction laid down in the game's specifications.

Sound design

Sound Designer

Just like in a film, a videogame soundtrack is made up of voices, sound effects and music and just like at the cinema, sound plays a key role in creating drama and immersing the player/spectator in the heart of the action. A film's soundtrack is designed around the story and its unchangeable timeline: everything is managed using time code. In a game, audio depends on the vagaries of the player.

Sound designers are like architects building an audio environment. Together with the lead game designer and the lead artist, they define the game's atmosphere in terms of sound: the type of music, dialogues and sound effects (realistic or not) and how the atmosphere changes as the player progresses through the game. They may also suggest gameplay elements: sounds connected to puzzles, sounds warning the player of danger, or helping players to situate themselves in the game world...

During the production phase, sound designers create (or buy) sounds: recording dialogue, imagining sound effects, choosing music etc. These elements will then be transformed and, with the help of programmers, the sound designer integrates the sounds into the game. In a large-scale production, there may be a composer and musicians, but more often than not sound designers work alone and, like in the movie industry, often have to manage to integrate audio working to an extremely tight deadline, once almost everyone else has finished.

Sound designers work with digital audio editing software (Protools, Soundforge…), professional synthesisers, audio synthesis programming languages and the sound engine, which allows real-time treatment of game audio (eg ISACT or XACT on PC and Xbox 360).

Ergonomics

The ergonomist – a user interface designer

Videogames provide the means for a person (i.e. the player) to interact with a system for leisure or entertainment, or in the case of serious games to acquire knowledge and skills.

A videogame can more or less be compared to a virtual interactive environment, however certain subjective aspects such as player commitment, immersion and pleasure are particularly important in designing games that are both user-friendly and good fun.

So for videogames, ergonomics is based on:

Traditional methods and concepts

These methods and concepts originate in the fields of cognitive ergonomics and human-machine interface design.

Usability, utility, acceptability and user experience.

As well as: focus groups, comparative studies, user tests, modelling, activity analysis, expert analysis, evaluation grids, etc.

Industry-specific concepts

Level of difficulty, playability, player types...

Programming

Programmers

Using a specific language, programmers write (develop) code that enables the computer or the console to run the game and to create images and sounds in accordance with the player's actions. There are three levels of programming in a videogame. The level designer codes the scenario; object and character behaviour etc is coded by the gameplay programmer; and finally functionality in connection with the computer/console's structure and OS are in the hands of the engine programmer.

Engine Programmers

Engine programmers develop or adapt functionalities that make it possible to recreate every aspect of behaviour as well as render graphics and sound in real time. They supply different versions of these functions so that the game can be played on different platforms (consoles, PC...). The lead programmer is in charge of overall programming and is assisted by programmers who specialise in one of the 5 engines that correspond to basic game functions: graphics rendering, sound, physics, network and AI.

As we mentioned previously, game programmers either use existing engines (commercially-available or open source) or ones developed in-house. Engine programmers base their work on the PC/console functionalities provided by the manufacturer. Most games are developed in C++, except games on phones which are often programmed in Java.

Gameplay Programmers

Gameplay programmers develop the interactive behaviour of all the objects in the game. For example, they create a programme that activates the animation and corresponding sound effects when a player uses a weapon. Another classic example, in AI this time, is programming the route that a character or group of characters has to take to go from A to B (pathfinding). Gameplay programmers also develop a simple programming interface (a scripting language), which allows the level designer to code the storyline. These tasks rely on the game engine's basic functions.

The master JMIN, a field of experimentation

What is a 1st year master's project?

After 6 months theoretical classes and practical work, the students try their hand at a mini-project!

But what on earth is a mini-project?

The mini-project is the result of teamwork with at least 3 students working together over a 4-month period.

It must lead to an interactive, non-utilitarian, finished and tangible product, that is not too complex from a technical standpoint.

The player must be able to understand how to play in less than 10 minutes without the help of any written or oral instructions.

It's the perfect opportunity for students to give free reign to their imagination and creativity!

What is a 2nd year master's project?

The second-year project corresponds to the pre-production of games in the industry sense of the term. Students must design, test, document and convince industry professionals of the originality, interest and feasibility of their game project.

Students compose teams around five projects. Each of the 5 teams must include a project manager, two game designers, two graphic artists, a sound designer, two programmers and an ergonomist. The total time allowed for production is around 5 months.

Three presentations are made (December, February and March) to a jury made up of industry professionals and members of the teaching staff