Course Guide
Academic year 2023/24

Creation Labs 1 - Visual Practices
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Curse Code: 106069
Credits: 3 ECTS
Year: 3
Semester: First Semester
Type: COMPULSORY
Subject: Design Creation Lab
Date: 21/2/2024 11:09

This Course is taught in: Catalan
Tutorials may be carried out in: Catalan, Spanish, English

Course Description
Brief description

PHOTOGRAMMETRY - 3D MODELLING - DIGITAL SCULPTING - FLUID SIMULATION – PHYSICS

This laboratory will use photogrammetry as a central axis, a technique used to create a reconstruction of reality in a digital environment.

Using various ways of scanning and modelling in 3D, we will obtain figures and environments to design fictitious virtual worlds. We will incorporate the use of AI technologies, which have brought about a paradigm shift. We will analyse, use and discuss the ethics of the current commercial platforms.

We will look at references from major studios, but above all from freelance artists who have managed to create their own visual impact through their style. We will talk about the style of these artists to synthesise the resources they use and generate exercises to learn about them.

We will work on different visual techniques, 3D modelling and sculpting, which will make it possible for the final project to have its own personality, but without depending on the speciality being studied.

Training Objectives

1. To encourage creativity and abstract thinking based on an AI-generated fragment.

2. To introduce students to the process of 3D photogrammetry and the creation of digital models.

3. To explore the potential of artificial intelligence in different creative fields, to discuss the ethics of current commercial solutions.

4. Develop skills in 3D modelling, sculpting techniques, fluid simulation and material physics, as well as camera animation for the creation of digital environments.

5. Explore how to transport elements from the physical to the digital world, or how to view the physical world with digital effects.

6. Promote team collaboration and the exchange of ideas and 3D objects among students.

Recommendations

It is recommended to have taken and passed the compulsory second year of Audiovisual Resources, as some knowledge of Premiere will be useful.

It will be necessary to have a digital camera or smartphone to capture images of the physical elements and environments.

We will use as photogrammetry software free smartphone applications such as Polycam, Metascan or Luma AI, or licensed photogrammetry software such as Agisoft Metashape.

We will use as 3D modelling base the free software Blender with its rendering engines EEVEE and Cycles.

Preferably work with Windows.

Contents

The course develops these 3 blocks: Photogrammetry, 3D Modelling through Blender and Artificial Intelligence solutions.

Photogrammetry:
Current uses of photogrammetry in the market.
Artistic references that use photogrammetry.
Software scanning technique (learn the different steps of creating pointcloud, mesh and texturing).
Scanning technique by app (automatic).
Different formats for exporting photogrammetry.

Blender:
How to visualise photogrammetries and apply different visualisation styles in a 3D programme.

Case Study 0: Point Cloud to Mesh

Discussion of references analysing their style
What is style?
Deconstructing the image: composition, form, technique.

Blender basics
Plugins and PBR Materials

Case Study 1: Nikita Diakur, Lidl
        Project from View

Case Study 2: The Dragon Statue Andres Nagel
        2D Illustrator to 3D Blender
        Extrude from SVG

Case Study 3: Rosalia to frames
        Photogrammetry from video frames
        Scene lighting techniques

Case Study 4: Caldea in 3D
Photogrammetry from 360º panoramas

Case Study 5: Flags. Simulation
        Physics of forces (wind, movement)

Soft Body
Simulation of textile elements
     Inflation
     Pin points
     Vertex Groups

Case Study 6:
Fluid simulation

Animation of elements and cameras

Exporting 3D objects, static image and video frames

Rendering in EEVEE and Cycles

IA:
Current solutions and their uses.
Debate on the ethics of current solutions.
Image, audio and video references.
Modification of existing images with promts Playground AI.
Creation of new images with promts Playground AI.
Development of briefs and textual communication with ChatGPT.

Methodology

Teaching methodology

The classes will mainly be of a practical nature, so it is recommended that the student attends all the classes.
During the practical sessions of the course, different case studies will be replicated. These will be chosen from the previous analysis of references to learn how to create with the same techniques (see Contents section).

A debate on AI will be promoted in order to detect the new opportunities and risks that some of the current solutions on the market represent for artists and designers.

We will learn the technique of photogrammetry and its limitations by scanning various elements in an outing outside the classroom.

The projects will have moments of public exhibition in which both the ability to exhibit and the ability to analyse and make constructive criticisms will be developed.

Training activities

Presentation of the project statements, as well as related references and case studies.

Project work in the classroom.

Participation in debates and classes 10%.

Stock photogrammetry practice: 20%.
Bank of stock photogrammetries. Among all the students we will make a stock photogrammetry bank to share in the final project.

Practical Fanzine 20%.
Choose a theme and make a small graphic fanzine mixing photogrammetry and image.

Final project: 50%.
Generate a new chapter of the book Invisible Cities by Italo Calvino with ChatGPT. From this text and with the photogrammetries generated during the course in the class stock bank, represent the fictitious city narrated in the text with the photogrammetry and 3D techniques learnt.

Assessment

Assessment system
The aim of the continuous assessment approach is for students to be able to track their academic performance throughout the course, in order to allow them to improve it.
From the second enrolment onwards (i.e. if you have enrolled in the course before), the assessment of the subject may consist, at the discretion of the professor(s), of a final exam, which will allow the professor(s) to evaluate if the learning outcomes listed in the course guide have been achieved. In this case, the grade achieved in the exam will also be the overall grade awarded for the course.

General Assessment Regulations
// In order to pass a course, students must obtain a minimum grade of 5.0.

// Once a student has passed a course, he or she cannot be subject to a new assessment or be re-graded on that course.

// Any student who has not submitted all assignments required to be handed in or has attended less than 80% of the classes without having justified these absences will be considered "Not Assessed" (NA). In the case of justified absence, students must contact their professor(s) once they return to class to determine how they will make up for the classes they have missed.

// In the event that a student commits any irregularity that could lead to a significant variation in an exam or assignment grade, this exam or assignment will be graded 0, regardless of any disciplinary proceedings that may be initiated. In the event of various such irregularities for exams or assignments pertaining to the same course, the final grade for this course will be 0.

Appeal process

Students may appeal a grade by making a formal request to this effect to the faculty. Any revisions of grades will be carried out according to the academic calendar. Students who wish to have a work/project reassessed following a Fail grade or a justified absence may present the pending work at the end of the first week of make-ups, provided they meet the same requirements as the first time they submitted the work.

Re-assessment process

General Regulations

It is not possible to appeal a grade in the case of internships external to EINA, final degree projects, and assignments/activities that, due to their eminently practical nature, do not allow it.

To participate in the grade review, students must have previously completed and been evaluated on other assignments with a minimum total weight equivalent to two thirds of the total grade for the course or module.

Assessment Criteria

Participation in discussions and classes 10%.
Participation during the classes and the student's motivation in relation to the contents of the subject will be evaluated. Questions and participation in class discussions.

Practical Stock Photogrammetries: 20%.
The quality of the photogrammetries uploaded to the server will be evaluated, as well as the correct nomenclature of the files, preview photography, and the placement of the technical details in the collaborative Datasheet.

Fanzine practice 20%.
Originality and the ability to communicate a story through a combination of photogrammetry, photography and 3D modelling techniques seen in class + the presentation of the printed format will be assessed.

Final project: 50%.
The correct use of animation of objects and camera in the final video will be assessed, as well as the narrative and the correct use of the elements to represent the fiction.

Bibliography and Resources

Smith, A. (2023). "Fotogrametría: Fundamentos y Aplicaciones en el Modelado 3D". Editorial Imaginación Digital.

Johnson, R. (2022). "Modelado 3D Avanzado: Técnicas y Herramientas para Crear Mundos Digitales". Ediciones Creativas.

García, M. (2021). "Realidades: La Fusión Creativa de Fotogrametría y Modelado 3D en Narrativas Visuales". Editorial Mundos Híbridos.

Davis, P. et al. (2020). "Tecnología y Arte: Explorando el Potencial Creativo de la Fotogrametría y Modelado 3D en la Ficción". Colección Arte Digital y Futurismo.

Clark, S. (2019). "Fotogrametría para Principiantes: Desde la Captura hasta el Modelado 3D". Publicaciones Virtuales Modernas.