EXERCICES

Exercice 2

Think about what you want to do for your TFM. What will you research? Why is it relevant? How do you plan to do it? Try to start defining a Research Area and possible Empiric Field (labs) you are interested in.

For our TFM, we will investigate how color, light frequencies, and visual patterns influence perception, emotion, and cognitive states, and how this knowledge can be used to design an intelligent assistant for visual creators. The project is relevant because it links neuroscience with creative visual design. There are not current IA tools that integrate color science + SSVEP + perception research. Also, will help artists to create visuals and will support emerging fields like neuroaestethics and computational creativity.

To do it, we will collect and preprocess scientific papers, create embeddings and a RAG system. Then with a tool created in touch Designer called LOPs, we will connect our model and create the user interface. The system will output scientifically grounded visual suggestions, but with also some degree of autonomy. We will be focused on different research areas such as visual perception and cognitive science and, in creative AI. We will focus on the empiric field of TouchDesigner Environment, Media art and visual design settings.

Exercice 3

Try to summarize the red lines (red flags!) of your project. What don't you want it to become? This list will mark the technical, practical and ideological compromise with your project:

This project must not become pseudoscientific, rigid, manipulative, or creatively limiting. It must remain scientifically grounded, technically transparent, and artistically open. With a scientific bases, we want to to create a tool that also has some lateral thinkig and try to simulate the human behavior.

1. Scientific Red Lines

- The system must not invent neuroscientific information.

- No overstating evidence or turning correlations into causation.

- Avoid oversimplified statements about brain function or perception.

- No mixing scientific data with pseudoscience or speculative claims.

2. Technical Red Lines

- The project must not become a generic visual generator without scientific grounding.

- Avoid a fragile or non-modular pipeline that depends on one model or tool.

- The agent must not ignore RAG context.

- The system should not become slow, impractical, or unusable in real-time settings.

3. Ethical Red Lines

- The system must not make therapeutic or clinical claims.

- No manipulation of emotional states or psychological influence.

- No personal data collection beyond the user's prompt.

- Avoid harmful visual outputs (e.g., overstimulation, risky flicker frequencies).

- Prevent cultural or perceptual bias from dominating suggestions.

4. Artistic / Conceptual Red Lines

- The project should not reduce creativity to rigid formulas.

- Not intended to replace artistic judgment—only to support it.

- Avoid becoming a preset machine with predictable outputs.

- Must preserve the experimental and interpretative nature of visual creation.

Exercice 4

Select three materials or technologies that you use in your work: fabric, sound, light, immersivity, waste, data, or even bodies. Create a tetrad in an attempt to understand that specific material. The idea of the exercise is not only to analyze the material through the tetrad system, but also to understand its transformative potential from a creative perspective:

We have chosen Light, Colour and Data. Light and colour. The objective of the project is to manipulate light freqüències, flicker, and visual response. Also to focus on colour percepction based on color-emotion mapping and cortical color processing. Finally we chose Data because our System uses text embeddings LLM, RAG retrieval and a lot of more data implemented on Touch Designer.

LIGHT

1. Enhances

Visual perception and spatial orientation

Emotional atmosphere and immersion

Neural entrainment (through frequency, flicker, intensity)

Focus, attention, and perceptual clarity

2. Obsolesces

Static environments

Physical scenography and heavy structures

Natural light as the only expressive tool

Passive, non-reactive visual design

3. Retrieves

Ritual illumination and symbolic lighting

Early cinematic experimentation with shadow and contrast

Pre-electric light experiences (candles, fire, stained glass)

The instinctive human response to brightness, rhythm, and glow

4. Reverses into

Sensory overload, fatigue, overstimulation

Visual noise and perceptual confusion

Emotional manipulation through light

Hyper-controlled, artificial environments that feel detached from nature

COLOR

1. Enhances

Emotional expression and affective communication

Cognitive modulation (attention, memory, mood)

Perceptual richness (hue, saturation, contrast)

Crossmodal associations (sound ↔ color ↔ emotion)

2. Obsolesces

Monochromatic or low-information imagery

Purely symbolic or cultural interpretations of color

The need for verbal emotional expression (color becomes the message)

Static palettes fixed by physical medium

3. Retrieves

Ancient symbolic uses of color (rituals, healing, mythology)

Early color theory traditions (Goethe, Itten, Albers)

Emotional synesthesia and intuitive perception

The body's visceral reaction to chromatic stimuli

4. Reverses into

Emotional manipulation or bias

Cognitive distortion (red → stress, blue → detachment, etc.)

Perceptual overload

Loss of authenticity through over-processing or artificial palettes.

DATA

1. Enhances

Pattern recognition and predictive modeling

Adaptive systems that respond to users

Large-scale knowledge integration (like your RAG system)

Real-time feedback and personalization

2. Obsolesces

Manual curation and annotation

Singular authorship and fixed narratives

Intuition-only decision making

Traditional research workflows

3. Retrieves

    Early classification systems (libraries, taxonomies, archives)

    Cybernetic thinking (feedback loops, systems theory)

    Rituals of measurement and observation

    Collective intelligence and shared knowledge practices

4. Reverses into

    Surveillance, visibility, and behavioral prediction

    Reduction of meaning to metrics

    Bias amplification

    Loss of ambiguity and unpredictability — everything becomes quantified

Exercice 7 and 8

We have created a style where we give crèdit to the name of the autors:

Reference List (Alphabetical by Author Name)

- CLARA MENDOZA. (2021). Neon Strokes: Code Painting. Verso Books (London). Translation by Julien Moreau. *Book*.

- ETHAN CLARKE. (2019). Artificial Minds, Human Art: Rethinking Creativity. Caja Negra Editora (Buenos Aires). Translation by Emma Thompson. *Book*.

But after discussing a bit, we thought that as we are doing some scientific research as well as thinking that this document can be the start of something bigger, we want to use the APA system that is the most used for scientific research and papers.

Exercice 9

We are interested in exploring a problem that keeps appearing around us: the way many artists today create visuals without fully grounding them in intention or knowledge. It feels like there's a growing gap between what an artwork shows and what the artist wants to say. Sometimes the image looks powerful, but when we look closer, the conceptual base is weak or missing entirely. And other times, the intention is strong, but the visual language doesn't manage to express it.

What we want is to work on a tool that helps close that gap. A way to connect what the artist imagines, feels, or wants to communicate with the visual decisions they make. Not to limit creativity or impose rules, but to avoid that sense of "visuals for the sake of visuals" that has been taking over. We believe that when an artwork is built on real knowledge, technical, cultural, historical, emotional. It becomes more coherent, more honest, and more capable of reaching people on a deeper level.

So, our research object is this intersection between intention and visual production. We want to understand why these disconnects happen, how artists make decisions, and what kind of support system could guide them toward more meaningful work. It's important because industry, the internet, and even new technologies encourage speed over depth, production over reflection. And we don't want to lose the thoughtful part of artistic practice.

Exercice 10

In our research, we want to focus on a problem that keeps appearing around us: the way many visual artworks are created without a deeper intention, without grounding, and often without the knowledge that could give them strength. We keep noticing how easy it is today, especially with digital tools to generate images. And this gap between *visual impact* and *conceptual intention* is something that troubles us.

What we want is to explore how we could design a tool or a system that helps artists connect their visuals with their ideas in a more conscious way. Not to control or restrict them, but to support them to create a space where the artist is almost "invited" to reflect on why they are doing what they are doing. We imagine a kind of companion, or framework, that prompts the artist to think about their motivations, influences, and references, and helps translate that into the visual part of the work.

We believe it is important because art loses something essential when the visual comes before the intention. When the image looks good but says nothing or says something the artist didn't mean. If we can help align the image with the intention, maybe we can contribute to a more conscious and informed creative process. Our hope is that this thesis can offer not only a theoretical reflection, but also some practical methodology, prototype, or conceptual tool that other artists could use.