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I dream of hybrids: the last move

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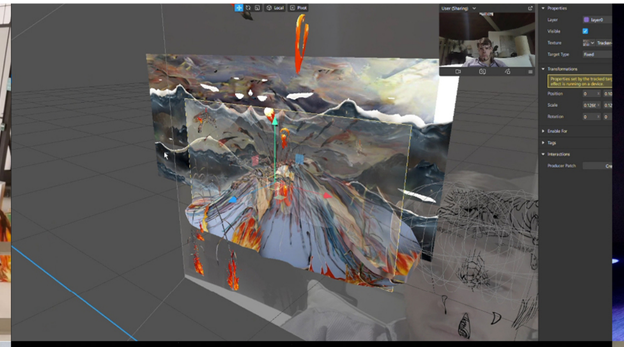

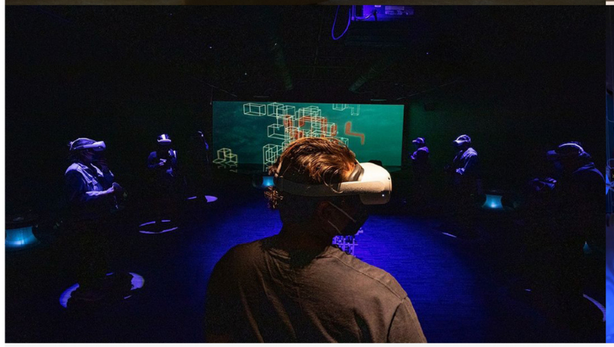
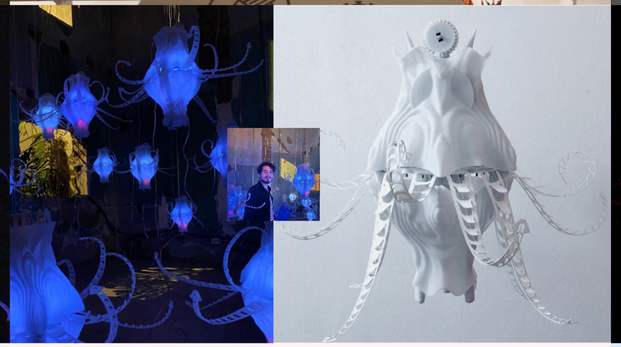

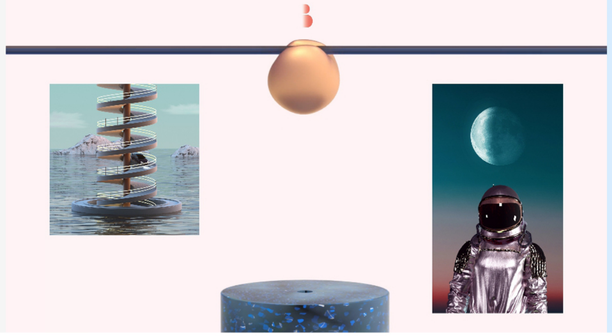

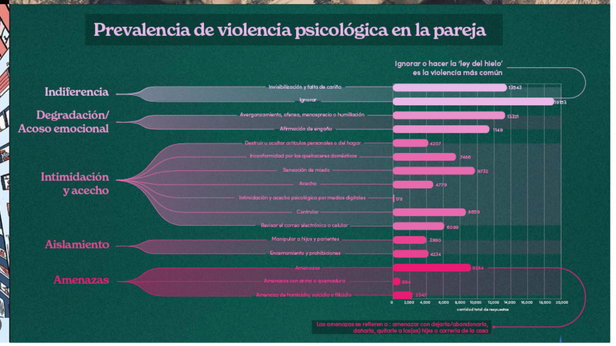

Work selection 2022

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OUTLINE

01 This talk is not about
- Moore's Law
- Design and AI opportunities
- Transitions

02 Why hybrid designers
- The digital era
- Science - Technology - Design (Gui Bonsiepe)
- Core principles of digital objects
- A computerized world

03 How to become a hybrid designer
- Change in materials, skills and tools
- The subjective experience

04 From music to gene expressions
- Hidden gestures in data
- Body I sound I gene expressions

The digital era

- Current time period in which **digital technology plays a significant role in daily life** and in the functioning of society
- Widespread **adoption of computers and the internet**
- **Personal computers** in the 1970s and 1980s

Science - Technology - Design

- Science is the **production of knowledge** and it supports the production of **cognitive innovation**
- Technology supports the **production of instrumental innovation**, it consists of the production of **know-how**
- Design activity is neither the production of knowledge nor the production of know-how, but the **articulation of the interface between artifact and user**

Source: The chain of innovation science · technology · design | Gui Bonsiepe

Core principles of digital objects

- Numerical representation
- Modularity
- Automation
- Variability
- Transcoding

Source: The language of new media I Lev Manovich

Hybrid-designers

- **Deep understanding** of what computers can and cannot do
- Creating **abstract models of the world** to be tested trough computational exploration
- Computers are **powered by our decisions**

Ivan Sutherland

Sketchpad 1963

Change in materials, skills and tools

Production materials

- Data
- Models
- Algorithms
- Anything virtual | XR tech
- Minds and computers

Skills

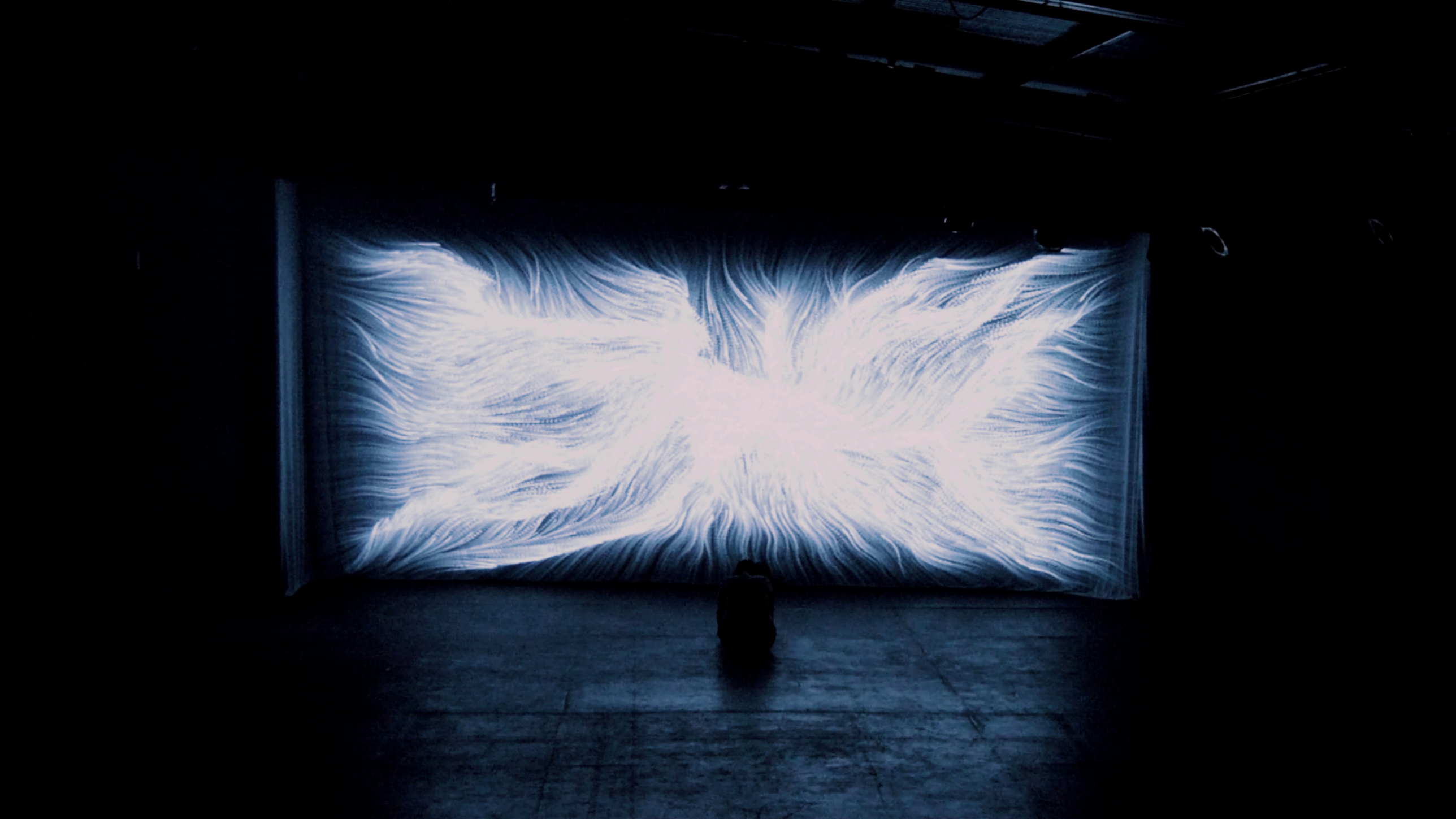
- Procedural thinking
- Data wrangling and analytics
- Network science
- Computer simulation

Tools

- No code tools
- AI tools

The subjective experience

- **Personal perception and interpretation** of one's environment and **sensations**
- Cultural background, and **cognitive processes**
- Starting point for **understanding the nature of reality and the self**



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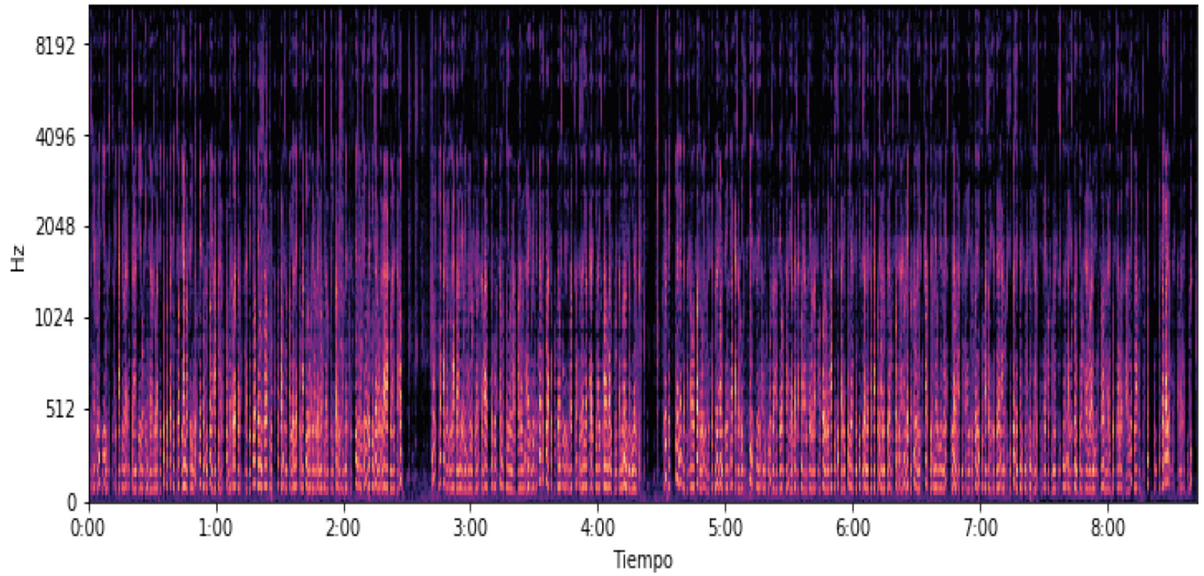

Data exploration

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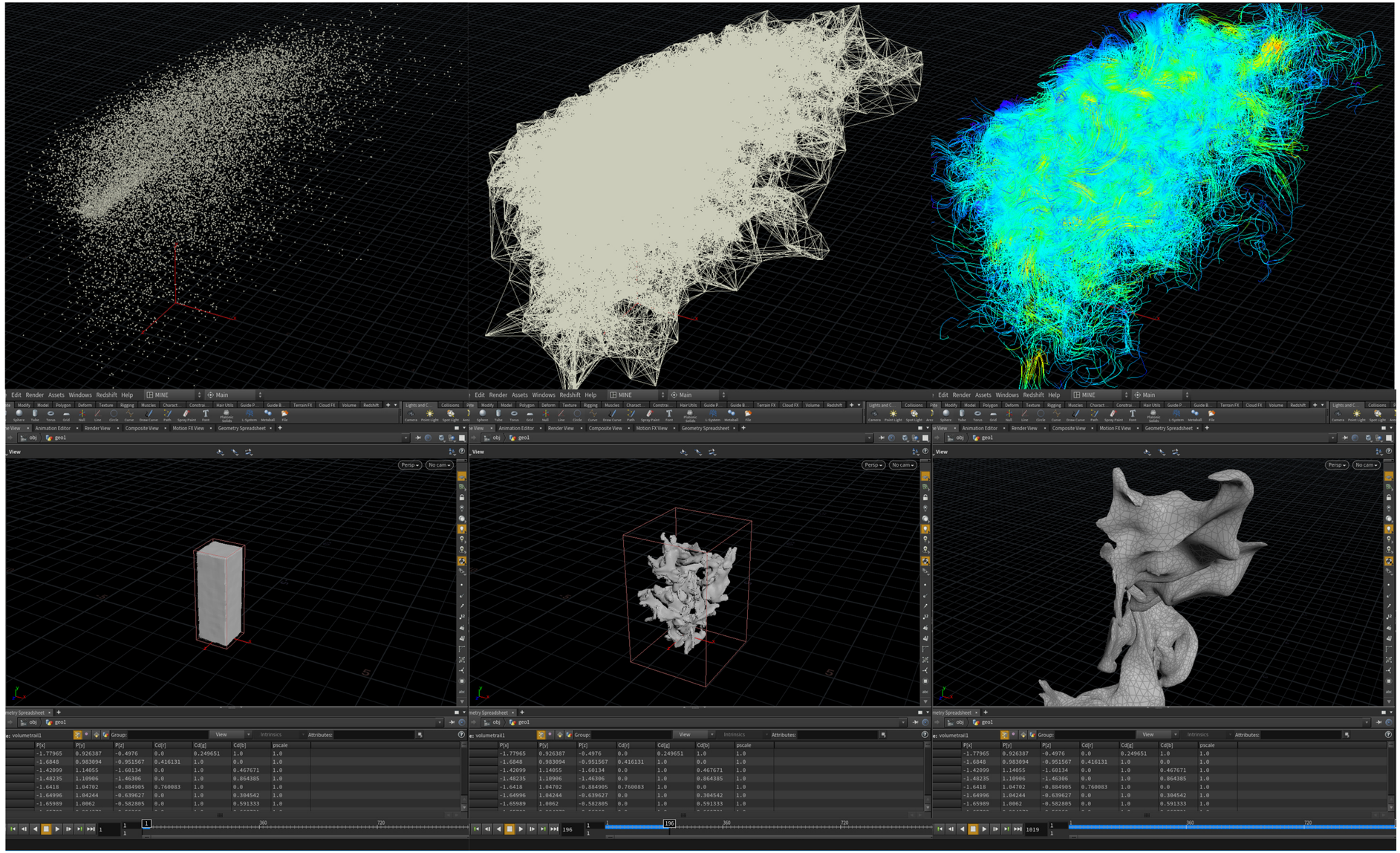
FROM MUSIC TO GENE EXPRESSIONS



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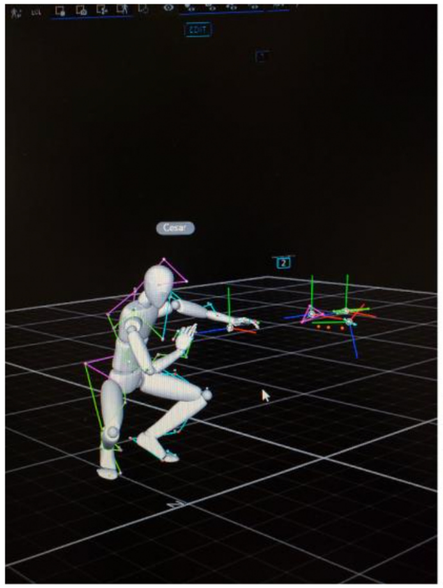
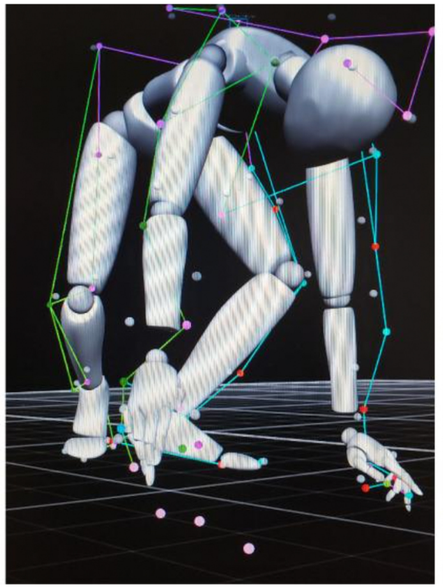
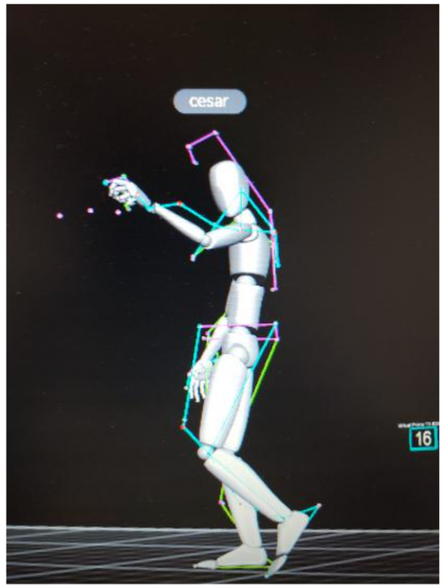
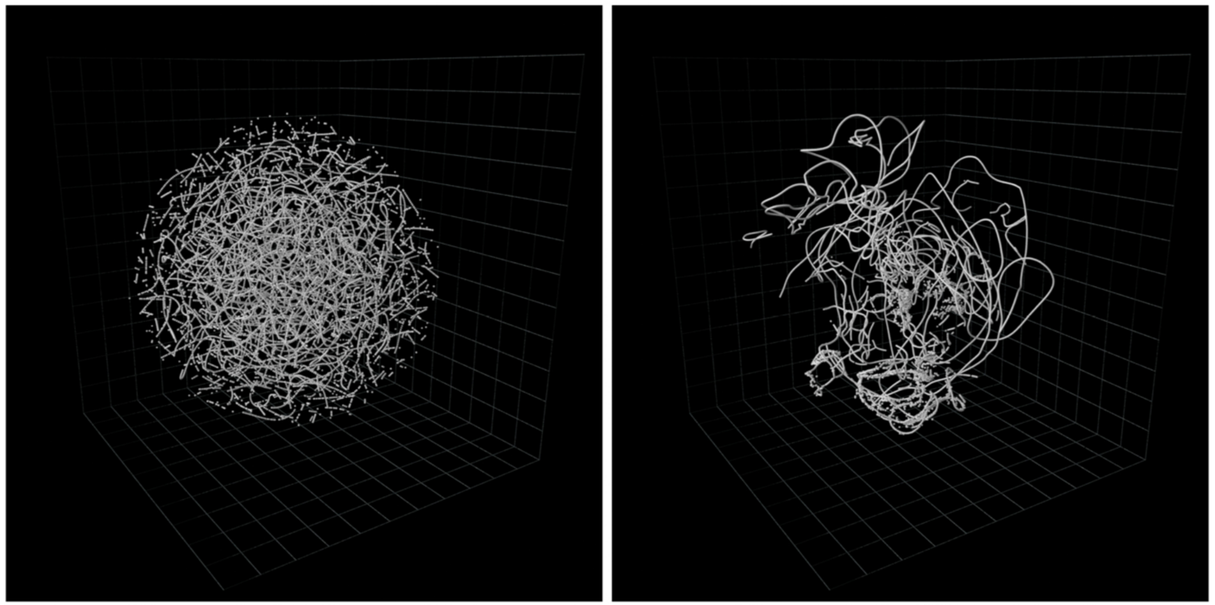






Body | Motion capture

Gestures in data



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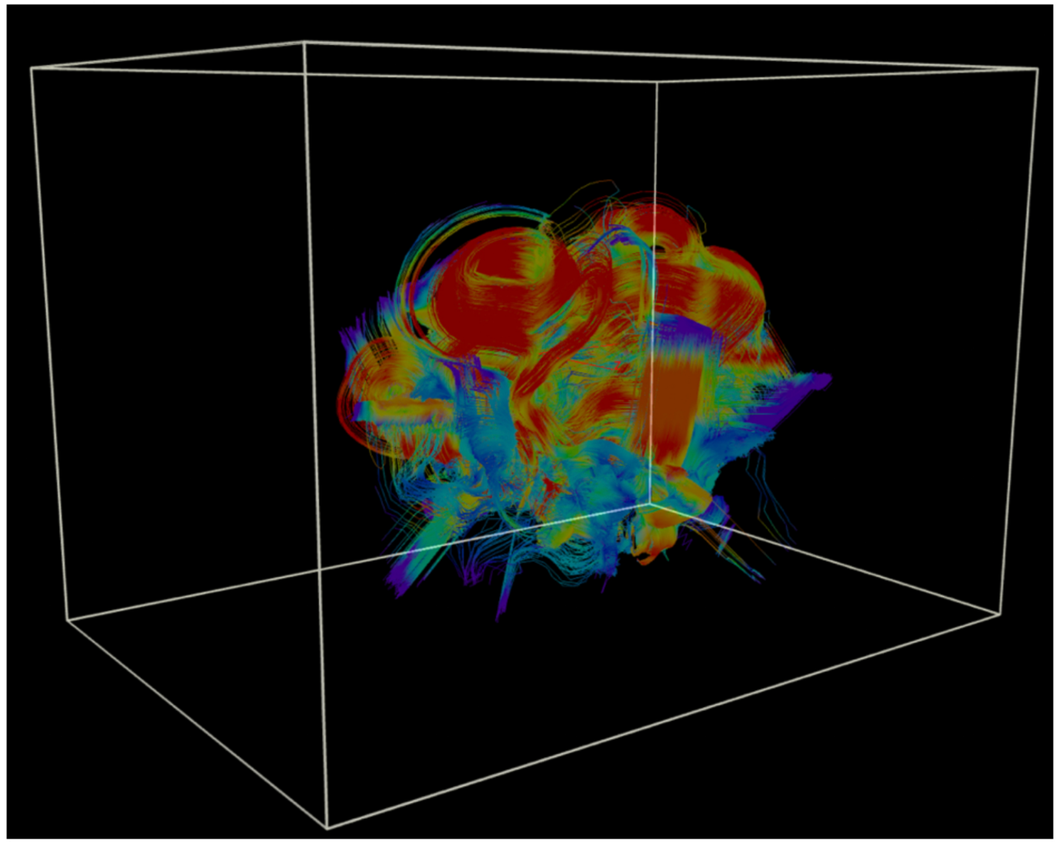
t-SNE Iterations: 5000 perplexity: 50



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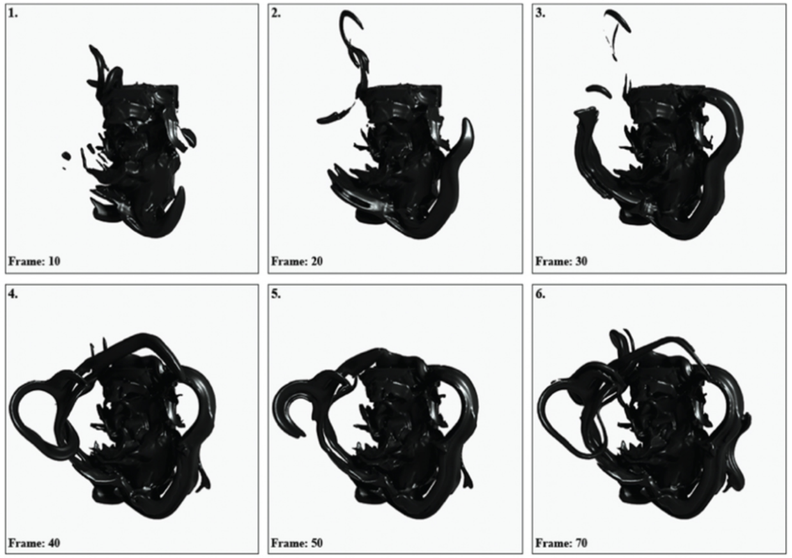
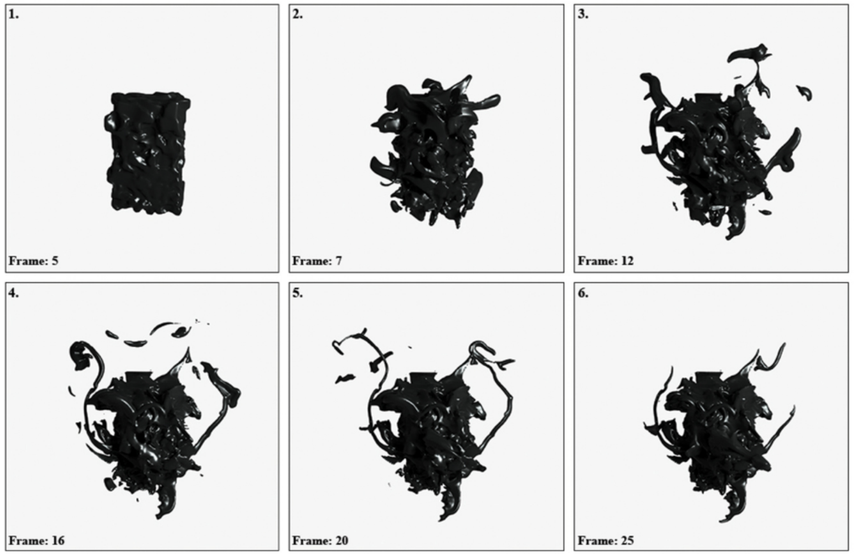
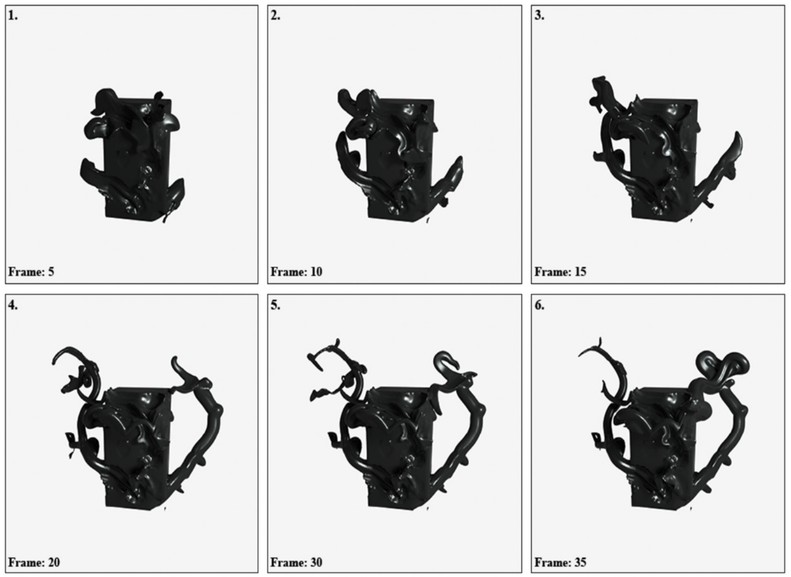
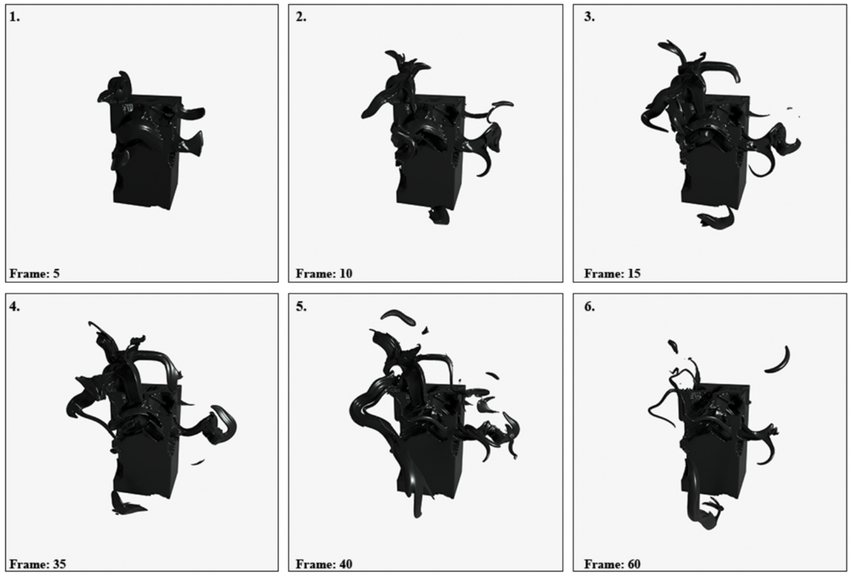
FROM MUSIC TO GENE EXPRESSIONS

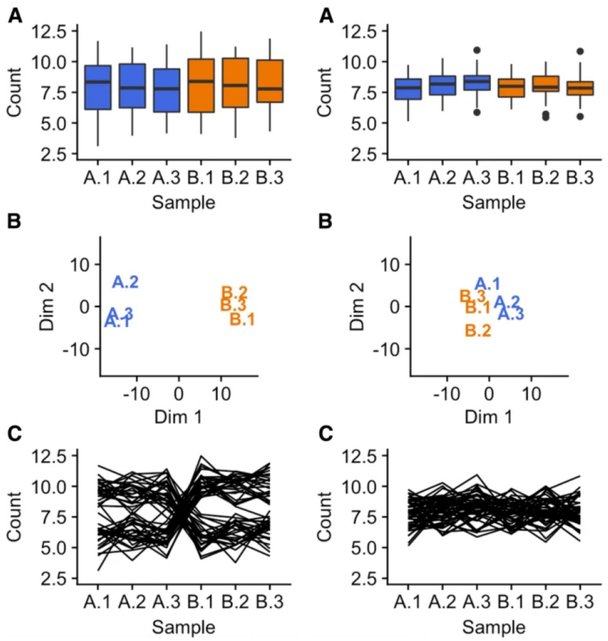


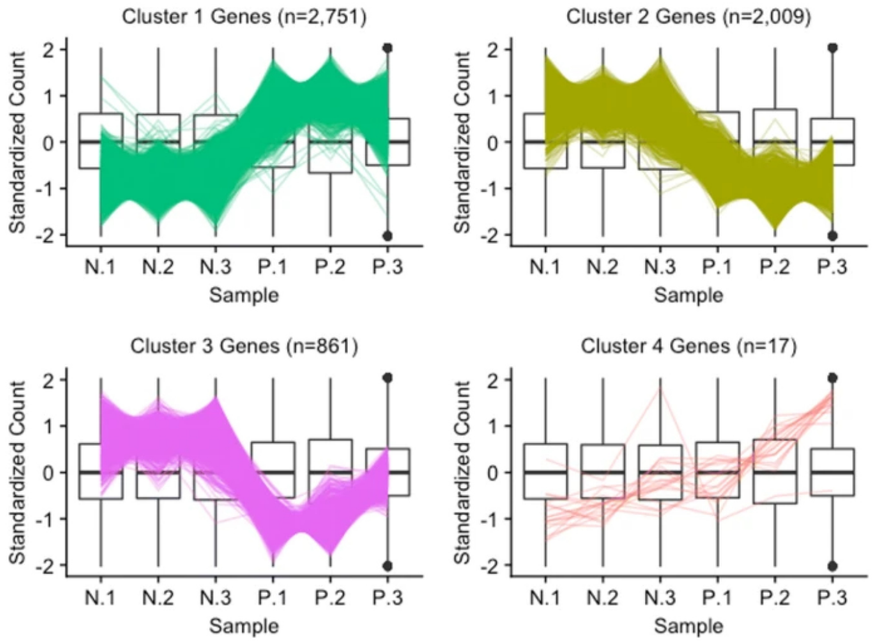


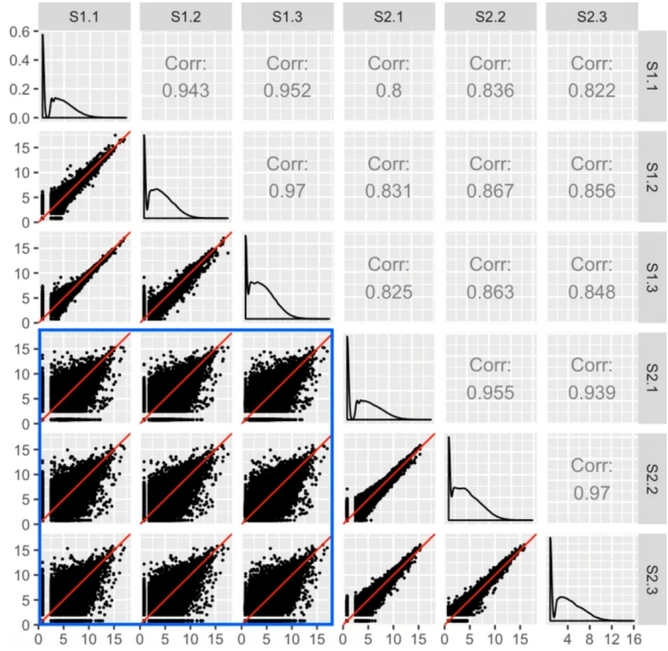




Differential expression analysis







Source: Visualization methods for differential expression analysis

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Visualization for gene expression dynamics in single cells

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(The unimaginable)

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