III International Conference on Computational and Cognitive Musicology

ICCCM
2025, Aalborg, Denmark

University of Alicante, Spain
Instituto Superior de Enseñanzas Artísticas (ISEACV)

Towards best practices in visual design of graphical interfaces for computational musicology

Marina Maciá | marinamf@dlsi.ua.es - **David Rizo** | drizo@dlsi.ua.es - **Javier Sanchis** | javier.sanchis@ua.es

Introduction

- The **potential** of well-designed**, graphical user interfaces (GUIs)** has been demonstrated by various scientific studies. **Visual design** supports interaction design (IxD) and improves the overall user experience (UX).
- In computational musicology, **design remains underappreciated** and fails to realise the full potential of the underlying systems.
- **Design is not the icing on the cake.** Musical GUI are considered as **artistic** and **intuitive**. The **functional** facet of graphic design seldom applied.

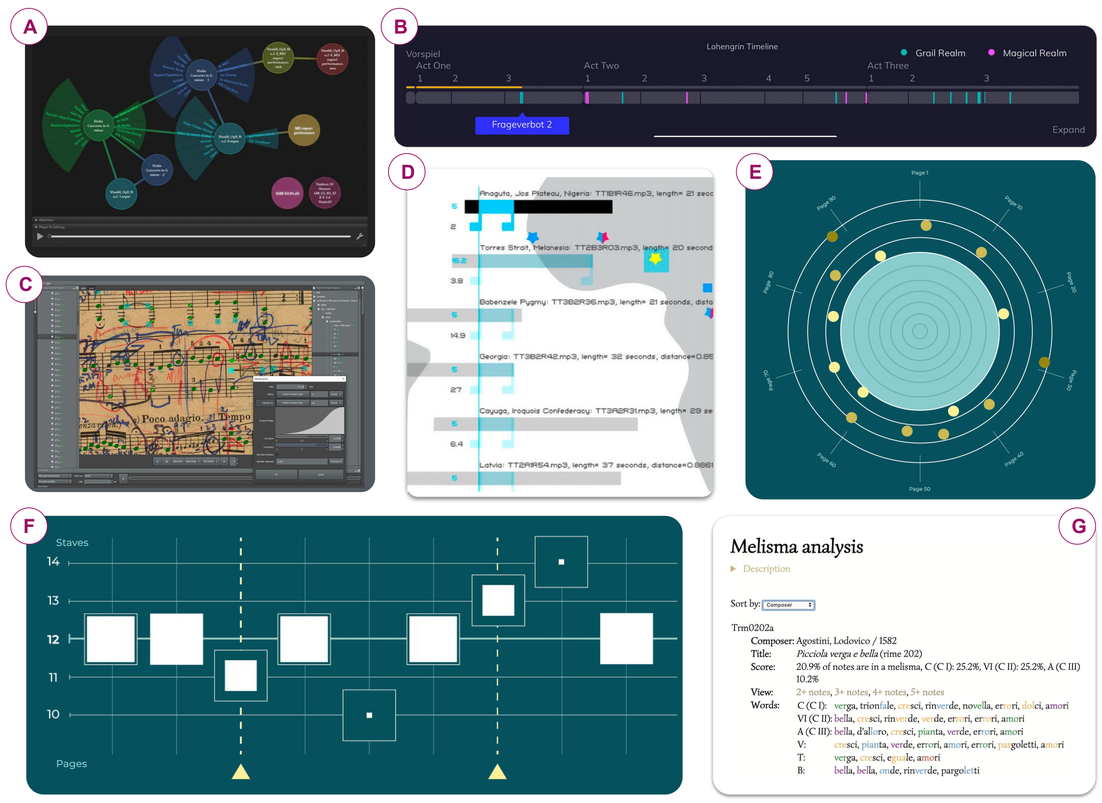
Previous reviews

Lee et al. (2015) and Knees et al. (2020) on MIR; Brown et al. (2017) on music interface interaction; and Isaacson (2023) on music visualization, primarily address usability and UX via **user tests,** rather than describing causes through expert heuristic evaluations grounded in **design principles.**

Main Objective

Our project aims to provide a **framework** to help researchers devise **visual** interfaces for music informatics. In this work, a **review of the scientific literature** is being conducted by compiling **graphic aspects** present in related scientific literature.

Support examples



Screenshots reproduced from the GUI described in (**a**, **c**) Berndt, A. (2022); (**b**) Dreyfus et al. (2025); (**d**) Magas et al. (2013); (**e**, **f**) Maciá et al. (2025); (**g**) Ricciardi et al. (2020).

Methodology

PRISMA-informed workflow

A **focused corpus** has been gathered for reviewing the application of graphic design concepts in UI in the field of **computational musicology**.

Step 1 Source selection (8.350 papers)

CMMR, DLfM, JNMR, ISMIR, MEC, NIME, SMC, TISMIR.

Step 2 Filtering by keywords (4.837 papers)

- **Scope terms:** UI, UX, *interface*, HCI, *design*, user, visual, usability, interaction, feedback.
- **Design-specific terms**: aesthetic, cognitive load, color, ~~composition~~, (weight), Gestalt, *gradient*, graphic, hierarchy, icon, shape, typography.

**Due to polysemy, we have prioritized "meaningful" recall over precision to avoid excluding relevant articles.*

Step 3 Selection of articles with images (572 papers)

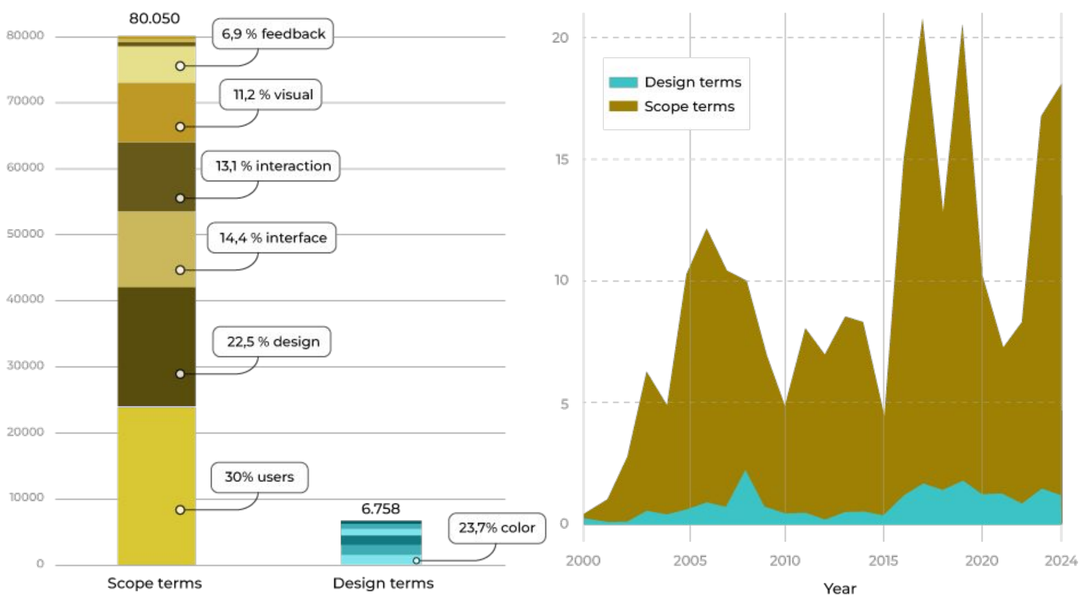
A visual inspection is carried out to discard articles that do not contain an image of the interface.

Step 4 Final corpus (40 papers)

Results

Despite frequent mention of user-related terminology, there is a **clear imbalance** with regard to key elements of user interfaces, namely graphic terms, among which "color" stands out.

The community's focus **grows slowly and not steadily over time** on interfaces, but its language about visual design stays unattended.



Conclusions

- Interest has been shown in considering **human-centered design**.
- **Visual design** is used methodologically in interface design industry.
- Based on existing music visualization techniques, and graphic design theories embedded in UI, we are in the process of filling the gap by building a **methodological framework** for this area.

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Acknowledgements

This work is supported by the Spanish Ministry of Science, Innovation through the **LEMUR project** (PID2023-148259NB-I00). Marina Maciá acknowledges the Carlsberg Foundation grant (CF24-2307) and ISEACV UpAI project.