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

Marina Maciá[1,2], David Rizo[1,2], and Javier Sanchis[1]

[1]Universidad de Alicante, Spain
[2]Escuela de Arte y Superior de Diseño de Alicante - Instituto Superior de Enseñanzas Artísticas de la Comunidad Valenciana, Spain
{*marinam.ferrandez,drizo,javier.sanchis*}*@ua.es*

User interface (UI) design, historically recognised as an important component of computational musicology and related disciplines, remains underappreciated and fails to realise the full potential of the underlying systems.

The scientific literature includes works that consider the user central [1], trace the evolution of the interface over the course of advances in music processing [2], explicitly address usability [3] and user experience (UX) [4], evaluate systems from the user's perspective [5, 6], exhaustively analyse visualisation techniques [7, 8] or apply them to effectively communicate complex content to end users [9]. In addition, initiatives such as ICCCM and others recognise the potential of well-designed, human-oriented interfaces.[1]

Although inherently creative, design can be guided by techniques [10]. Some existing guidelines draw on system studies [11], yet none target applied graphic design as a key component of UI [12]. Our project aims to provide a framework to help researchers devise visual interfaces for computational musicology.

This paper outlines the project's first step, demonstrating via literature examples how interface visual design shapes research outcomes. Using an adapted QUOROM method [4], we have systematically reviewed computational musicology related conferences and journals. Targeted keyword searches (e.g., "UI/UX", "visual", "usability","interaction", "cognitive load") and manual screening of interface visuals filtered 5,000 papers to 600 for final review. [2]

From these, examples of 40 works have been used to describe foundational principles of Gestalt perceptual psychology [13] and UX/UI theories [14], serving as the basis for driving the aforementioned visual design framework for computational musicology.

Ultimately, this study advocates for integrating human-centered visual design from the outset, positioning GUI visual design as a critical component in realizing the full potential of computational musicology systems.

We request that the presentation be made orally because it is difficult to include all the examples discussed in a single poster.

[1]See https://2023.hci.international/W1.html, https://sites.google.com/view/hcmir25/

[2]Conference papers and abstracts obtained mainly from CMMR, DLfM, ICCCM, ICMC, ISMIR, MEC, NIME, SMC; journals: CMJ, JNMR, TISMIR, and works cited from the explored papers.

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