

# Designing Dynamic Logotypes to Represent Data

Jéssica Parente, CISUC - Department of Informatics Engineering, University of Coimbra, Coimbra, Portugal

Tiago Martins, CISUC - Department of Informatics Engineering, University of Coimbra, Coimbra, Portugal

João Bicker, CISUC - Department of Informatics Engineering, University of Coimbra, Coimbra, Portugal

Penousal Machado, CISUC - Department of Informatics Engineering, University of Coimbra, Coimbra, Portugal

## ABSTRACT

This work explores how data can influence the design of logotypes and how they can convey information. The authors use the University of Coimbra, in Portugal, as a case study to develop data-driven logotypes for its faculties and, subsequently, for its students. The proposed logotypes are influenced by the current number of students in each faculty, the number of male and female students, and the nationality of the students. The resulting logotypes are able to portray the diversity of students in each faculty. The authors also test this design approach in the creation of logotypes for the students according to their academic information, namely the course and number of credits done. The resulting logotypes are able to adapt to the current students, evolving over time with the departure of students and admission of new ones.

## KEYWORDS

Data Aesthetics, Data-Driven Design, Generative Design, Graphic Design, Information Visualisation, Logotype, Type Design, Typography

## INTRODUCTION

Typography is a way of visualising language (Cheng, 2006). To designers, typography is valuable as it adds a layer of content and the choice of a typeface gives indications regarding the subject that is being addressed. In order to use typography in the best way, many designers study their anatomy and ways of categorising it.

Over time, the design of type suffered several changes. In the beginning, typographers tried to create alphabets with pure and uncorrupted letters. However, with the emergence of avant-garde movements, vision and expression aspects were overcome. Afterwards, the technological revolution created new possibilities for typographic experimentation. The design of typefaces through code helped the automation of the design process, making it possible for computers to generate new typefaces in seconds. As a result, new typefaces emerge to adapt to distinct contexts (Lehni, 2011; Knuth, 1986).

Technological advancements, along with the proliferation of the Internet, allow the exploration of new creative areas. The evolution of tools for typographic construction promotes the increase of

DOI: 10.4018/IJACDT.2019010102

Copyright © 2019, IGI Global. Copying or distributing in print or electronic forms without written permission of IGI Global is prohibited.

typography creation. Moreover, in modern society, there is an insatiable need to personalise everything whenever possible.

Visual identities created nowadays are becoming more dynamic. Museums, institutions, organisations, events and media are increasingly relying on this kind of identities. A comprehensive survey on dynamic visual identities is presented, for example, by Martins et al. (2019). This type of visual identity is characterised by variability, context-relatedness, processuality, performativity and non-linearity (Felsing, 2010).

Informed by this background, the authors explore through this work the intersection of type design, visual identity and information visualisation, investigating how can data influence the design of a logotype and how can a logotype convey information. As a result, the authors develop data-driven logotypes for the faculties and students of their university — the University of Coimbra (UC), in Portugal. To do so, a computational generative process is presented to dynamically design the glyphs, or letterforms, that compose the logotype according to input data on the faculties or students. This way, the logotypes are able to adapt to the current spectrum of students of the University of Coimbra, while incorporating and unifying the faculties or students in a coherent fashion.

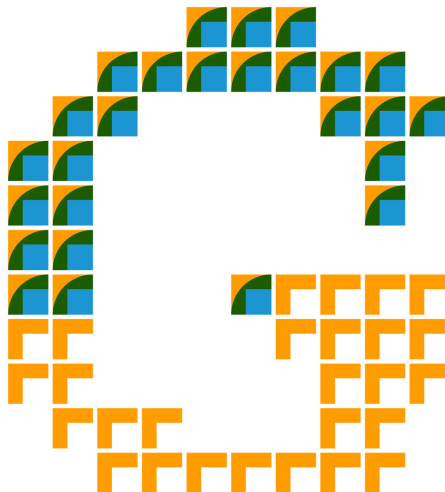
The experimental process behind this work comprises four successive iterations. In iterations I, II, and III, the authors aim to design logotypes for the faculties of the University of Coimbra. Therefore, the input data consists of the number of students in each faculty, the number of male and female students, and the nationality of the students. In iteration IV, the approach developed in iteration III is used to design logotypes for the individual students of the University of Coimbra. So, the input data consists of the course and the number of credits done by each student.

The remainder of the paper is structured as follows: Background section describes design projects where visual identities and typefaces are influenced by data; Approach section concerns the development of presented work, summarising four different iterations and their specificities; finally, Conclusion section presents some overall conclusions and discusses future work.

## BACKGROUND

This section is divided into three parts. The first part introduces type design projects that take advantage of digital media and challenge traditional typographic creation. The second part presents projects that

Figure 1. Typical glyph for letter 'G' generated in iteration IV of the present approach. More results at [cdv.dei.uc.pt/data-logotype](http://cdv.dei.uc.pt/data-logotype).



13 more pages are available in the full version of this document, which may be purchased using the "Add to Cart" button on the publisher's webpage: [www.igi-global.com/article/designing-dynamic-logotypes-to-represent-data/233615](http://www.igi-global.com/article/designing-dynamic-logotypes-to-represent-data/233615)

## Related Content

---

### NRU ("near you"): Real-World Interaction with a Mobile Phone

Mathias Dahlström, Richard Lewis Jones and Marko Balabanovic (2012). *Innovative Design and Creation of Visual Interfaces: Advancements and Trends* (pp. 1-12).

[www.irma-international.org/chapter/nru-near-you/64042](http://www.irma-international.org/chapter/nru-near-you/64042)

### Becoming Creative through Self Observation: A (Second Order) Cybernetic Learning Strategy for the Metaverse

Elif Ayiter (2011). *International Journal of Art, Culture and Design Technologies* (pp. 22-35).

[www.irma-international.org/article/becoming-creative-through-self-observation/54235](http://www.irma-international.org/article/becoming-creative-through-self-observation/54235)

### Re-Coding Homes as a Flexible Design Approach for Living Environments

S. Banu Garip, Nilufer Saglar Onay and Ervin Garip (2020). *Cultural, Theoretical, and Innovative Approaches to Contemporary Interior Design* (pp. 284-306).

[www.irma-international.org/chapter/re-coding-homes-as-a-flexible-design-approach-for-living-environments/249462](http://www.irma-international.org/chapter/re-coding-homes-as-a-flexible-design-approach-for-living-environments/249462)

### Canon and Process in the 3D Modeling of Human Anatomy

Hugo de Azevedo and António B. Araújo (2021). *International Journal of Creative Interfaces and Computer Graphics* (pp. 1-16).

[www.irma-international.org/article/canon-and-process-in-the-3d-modeling-of-human-anatomy/291088](http://www.irma-international.org/article/canon-and-process-in-the-3d-modeling-of-human-anatomy/291088)

### A Line of Movement: From Vegetative Development to Animation

Cibele Saque and Antonio Costa Valente (2021). *International Journal of Creative Interfaces and Computer Graphics* (pp. 53-71).

[www.irma-international.org/article/a-line-of-movement/291091](http://www.irma-international.org/article/a-line-of-movement/291091)