

CALICO discover. experience. design.

tim's new online platform makes its fabric sample collection digitally accessible

The new digital project of the State Textile and Industry Museum Augsburg (tim) makes historical fabric patterns accessible to a wide public audience. The use of artificial intelligence (AI) allows the collections of the museum to be displayed in a new, surprising form.

Project Description

With its textile pattern books, the tim is in possession of a unique collection of items that count among the Federal Republic of Germany's most valuable national cultural treasures. More than 550 pattern books covering a time period stretching from 1792 to 1996 contain well over a million fabric print patterns from more than 200 years of European fashion and design history. The project "CALICO - discover, experience, design" makes more than 3000 patterns digitally accessible and displays them in a completely new manner using artificial intelligence (AI). The interactive platform <http://calico.timbayern.de> is accessible from home as a desktop application. The platform allows this vast number of patterns to be made available in processed form - backed up with an enormous volume of data.

Visitors can immerse themselves in the pattern treasures of the tim on the three levels "discover, experience and design" and can examine them in various ways. A colour circle and a content cloud first sort the patterns chronologically or according to aspects of content. Users can deepen their knowledge on individual topics and experience more about the world of motifs and colours. What does Augsburg red look like, for example, and when were paisley patterns particularly common? On this extraordinary journey through the history of textile patterns, users experience the world of patterns in an entirely new form. On this "trip", the historical patterns transition into newly designed ones produced using AI. The product is a seemingly infinite number of patterns that come as a complete surprise to our viewing habits: the fabric design of the future?

A third and final section encourages users to be creative themselves. After the gathering of pattern favourites, it is possible to clothe fashion silhouettes from various eras in a range of different patterns: an art-deco pattern on a baroque dress, a sumptuous flower pattern on a pair of pleated trousers, or one of the AI-designed patterns on a costume by Coco Chanel. There are no limits to one's fantasy!

Neue Augsburger Kattunfabrik (NAK) - New Augsburg Calico Factory

The textile company „Neue Augsburger Kattunfabrik“ emerged from the calico printing firm „Schöppler & Hartmann“ (1781 1880). Transformed into a joint stock corporation, it traded from 1880 to 1885 under the name „Augsburger Kattunfabrik“. Following financial difficulties, the corporation was newly founded in 1885 under the name „Neue Augsburger Kattunfabrik (NAK)“. The company delivered printed fabrics to customers all over the world. Towards the end of the 20th century, the decline of the textile industry in Augsburg affected the NAK as well. The famous firm went bankrupt in 1996 and was forced to close its doors forever, leaving behind the unique NAK archive. The pattern books, some of them in large format, form the core of the extensive collection, which passed into the possession of the State Textile and Industry Museum (tim) following the company's closure. The comprehensiveness of this unique collection places it firmly among the national cultural treasures of the Federal Republic of Germany.

CALICO

The title of the project is based on the historical term 'calico', meaning printed cotton material. It was named after its original production location in Calicut, India (Kozhikode). There, traditional weavers produced the simply woven fabrics from unbleached cotton. Mostly dyed and elaborately printed, these fabrics made their way to Europe as export wares, until the industry here was finally in a position itself to produce material of such high aesthetic quality.

Use of Artificial Intelligence

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The project CALICO sees several applications of artificial intelligence (AI). The AI undertakes the sorting according to colours on the basis of a HSV colour model, categorised according to hue, saturation and value, and hence very similarly to the human perception of colour. Arranged in a colour circle, the entirely unique colour character of the pattern collection is revealed. The AI arrangement according to structural characteristics of the patterns requires very precise observation in order to recognise the criteria used to group the patterns adjacent to one another in a so-called "content cloud". Observers are used to categorising patterns according to certain motifs, lines or stripes. The AI, however, sorts the patterns primarily according to flatness or linearity, regularity or fineness of structure.

In the "experience" section, the AI creates never before seen patterns. For this purpose, the model „StyleGAN2-ADA“ was used, developed by the firm NVIDIA. A „Generative Adversarial Network (GAN)“ is used in the field of machine learning to produce entirely new, artificial data. It is capable of creating worlds in a wide variety of ways that are deceptively similar to our own, for example the production of photographically realistic pictures.

In the project "CALICO", the artificial intelligence was trained using the historical patterns of the Neue Augsburger Kattunfabrik (NAK). The training consisted of adopting the characteristics of the originals and combining them in new ways, allowing the newly created patterns to reflect the visual image of the original material. In this manner, around 3000 original patterns could be used to create more than 75,000 entirely new patterns, presented here as a continuous film of patterns (pattern journey) merging into one another. Users can pause the video at any moment to observe the respective patterns more closely and to experiment with their favoured designs on various different fashion silhouettes, as well as downloading them if desired.

Funding Programme

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Image Rights

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Project Management: Anneli Kraft is an art historian with many years of museum experience, especially in the areas of object assessment and digital collection management as well as pedagogical presentation. In her dissertation „Das gute Glas. Design digital sammeln und erforschen“ (The good glass. Digitally collecting and researching design), she produced a database prototype that allows museums to record and exchange data on a particular subject area cooperatively. Her work is primarily focused on the further development of art history research methods in a digital context. In the project CALICO, she was able to use her experience in the development of digital strategies and online presentations, as well as her design expertise as a professional designer and design historian, to great effect.

Project Team: Dr. Karl Borromäus Murr, Dr. Michaela Breil, Mariama De Brito, Katja Cox

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