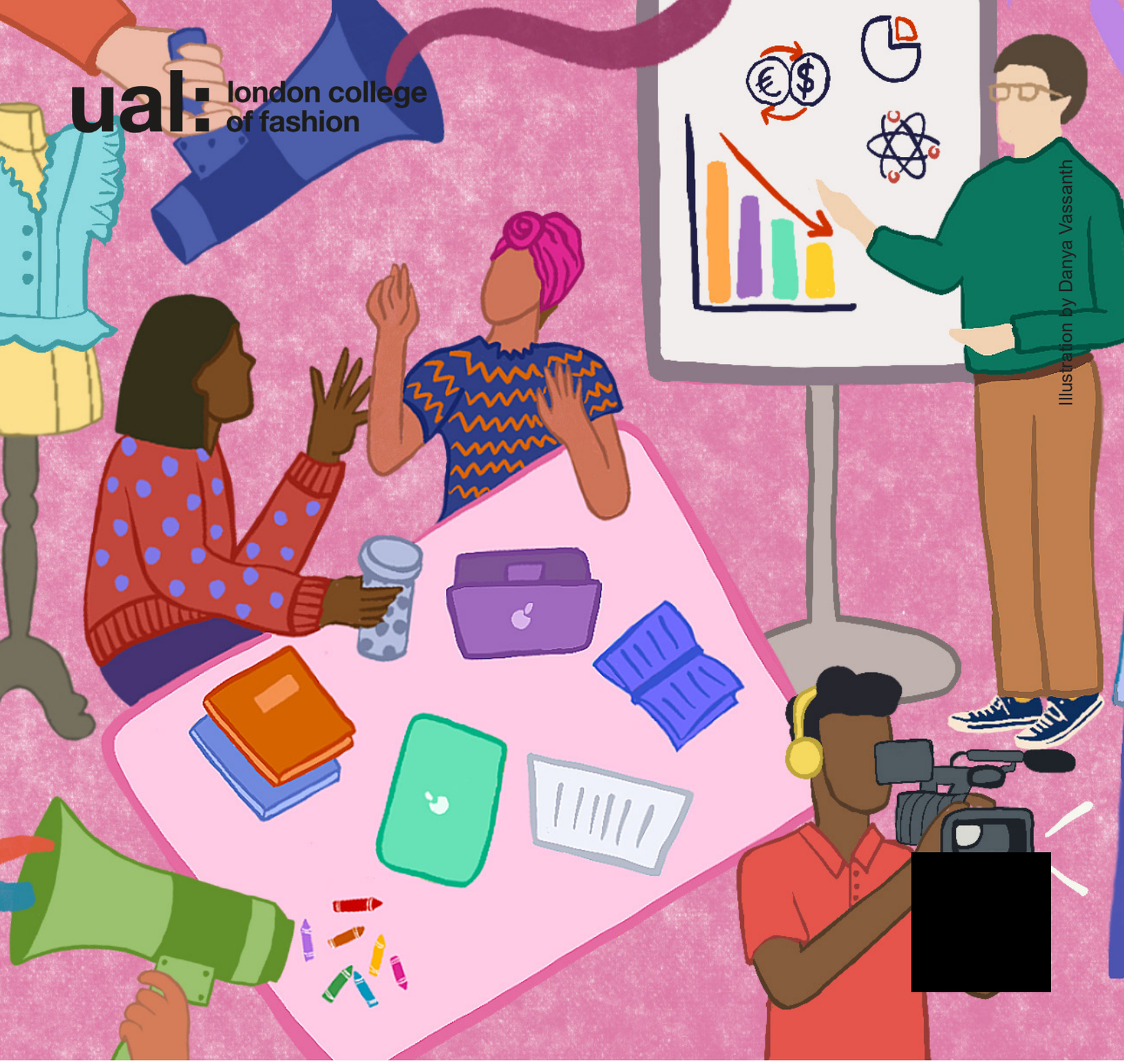

Guide to Digital Fashion

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This guide was written by Moin Roberts-Islam, Technology Development Manager at the Fashion Innovation Agency.

Laura Karklina (left) and Liza Kildjaskina (right) working, © Alys Tomlinson

The fashion industry has followed tried and tested processes for decades, relying on familiarity and consistency to continue to meet customer demands, but the recent changes in the social importance of technology mean that the industry needs to adapt, to the changing shape of the world around us.

Introduction

At the Fashion Innovation Agency (FIA), we use emerging technologies to disrupt existing practices within the fashion and retail industries. We create projects that continue to inspire by showing what is possible when two industries combined. The following will look at recent projects to show areas where digital technology can help fashion businesses improve their current practices and achieve their goals around sustainability.

Digital-Only Fashion (Computer-Aided Design)

Digital fashion is an area that has been gaining a huge amount of interest in recent years, where designers have used computer-aided design (CAD) software, such as CLO3D, Browzwear, or Optitex, to digitally design and model their garments and collections, rather than using the traditional routes of physical pattern cutting, toiling, and sampling.

This software allows designers to digitally pattern cut, make lay plans, create 3D models of their final garments, model different fabrics, textures, and finishes, and even animate these digital garments in some instances. These 3D files can then be imported into “game engines”, such as Unreal Engine or Unity, to further animate the garments and add digital environments and other effects.

Brands and retailers can also use these digital assets to market physical products, sometimes before they have been physically made, to gauge interest in particular styles and, more importantly, to adopt made-to-order business models, minimising wastage or surplus products ending up in a landfill. Made-to-order businesses also find it easier to implement local supply chains too, which reduces carbon emissions associated with transporting garments/samples.

An industry example of using this process is a project that we ran with fusion artist and fashion designer Sadie Clayton and digital fashion house The Fabricant in September 2018. More details, images, and the project video can be found here.

Other recent examples of fashion going down this digital route are:

- Digital fashion weeks – Helsinki Fashion Week
- Digital-only fashion collections – Check out these recent campaigns from brands such as Carlings, Auroboros, and The Fabricant and a whole host of digital designers on platforms such as DressX.

Virtual reality experience (VR) at the Summer Show,
© Alys Tomlinson

Capturing Physical Products Digitally

Not every brand wants to go down this digital-only route and many people are running successful businesses by selling physical products. However, there are also routes for these brands and retailers to benefit from advances in technology and to create digital assets of their own easily and quickly.

One of the most direct routes for digitising a physical product (if it has not been designed digitally), and creating a “digital twin” of it, is through photogrammetry. This is a process by which an object is photographed from multiple different angles by multiple cameras – these images are then “stitched” together using specialised software to create a photorealistic 3D version of that asset which can be used in many of the same ways as the CAD garments described earlier.

Like other digital assets, these models can then be used to market products, both online and for wholesale, without the need to ship products across the world – which again has multiple benefits from a sustainability perspective.

An example of using this kind of technology in a fashion context is an interactive, mixed reality fashion experience at London Fashion Week which we created with fashion brand SABINNA. More details, images, and the project video can be found here. You can also see more recent use cases of this technology here and here – in these examples, mobile phones were used for the photogrammetry captures, rather than a static rig of several high-definition cameras, making this method far cheaper to pursue and much easier to access for small and medium-sized brands.

Other recent examples of fashion brands digitising physical products in similar ways are:

- Burberry used photogrammetry, digital garments, and other techniques to create a digital Kendall Jenner in July 2020
- Balenciaga used volumetric capture (which uses multiple video cameras, instead of standard photos, to stitch together multiple video feeds into a moving capture) and virtual environments created in Unreal Engine to present their fall collection in December 2020

Immersive Digital Fashion Experiences

Another way that technology can be used to support brands' communication capabilities is as an aid to storytelling and raising awareness.

For example, traditionally, information around sustainability has been presented as large blocks of text, often in small fonts, as an extra tab on a product page – meaning that this vital information is very rarely seen and will only be accessed and understood by those who are actively looking for it. Therefore, a lot of a brand's efforts in these areas are often overlooked, or at best, misunderstood.

However, brands can convey the story behind a collection in other, more immersive ways, which can bring an audience of customers closer to the product in an environment that allows them to explore and find out more information at their own pace – and in a way that is more engaging and memorable than reading reams of long text in a hidden part of a webpage.

A good example of this is a virtual immersive experience that the FIA (Fashion Innovation Agency) team created in collaboration with technology partner AnamXR and materials science-focused brand PANGAIA in December 2020. More details, images, and the project video can be found here.

Ways to get started

As well as having a lot of potential, these technologies are also surprisingly easy to access, or at least to get started on. Below is a list of links and resources for anyone who wants to dip their toe (or fully immerse themselves!) into emerging technologies in these areas.

Fashion Innovation Agency collaboration with Fyodor Golan and Microsoft

Some of the CAD software mentioned above have free or subsidised subscriptions for students or individuals working at smaller organisations, as well as a vast amount of online learning resources for beginners (YouTube is another useful resource for beginners' videos!):

- CLO3D
- Browzwear
- Optitex

The most popular game engines for animating your digital assets and for creating virtual environments are also free to use and have an incredible amount of free online learning resources for beginners, both on their websites and YouTube.

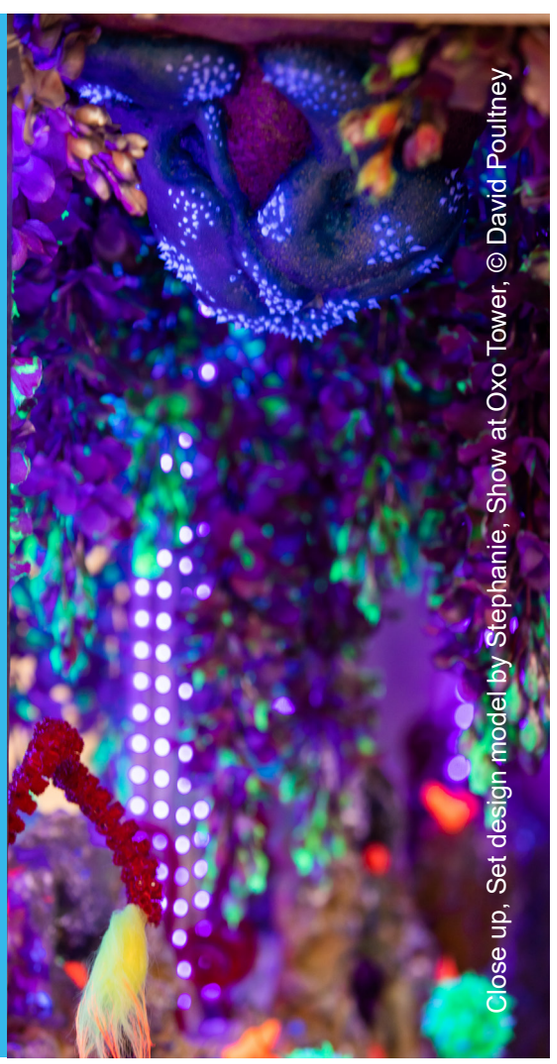
- Unity
- Unreal

If you would like to use your digital assets to create augmented reality experiences or smartphone filters, then these are the links for you. As always, a simple search on Google or YouTube will pull up a list of useful tutorials:

- ARKit – for creating experiences on Apple devices
- ARCore – for Android devices

For anyone looking to experiment with basic photogrammetry from a smartphone, these are some links (here and here) to help you to explore the right app to begin your journey.

These are only starting points for each area, but as with any new skill that you want to pick up, the best way to progress is to practice as often as possible and to go and explore on your own (and join the online communities out there – help from peers is another great way to develop your expertise!).



Close up, Set design model by Stephanie, Show at Oxo Tower, © David Poultney