

The Brooklyn Fashion + Design Accelerator's TEK-TILES team create 30 smart textiles

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<https://10.wp.com/thecurrentdaily.com/wp-content/uploads/2017/07/tektiles.jpg?ssl=1>

Touch pattern tracking TEK-TILE designed by team members Jingwen Shu and Renata Guai

What if clothing could change colour depending on your location or context? What if it could fold itself or change its shape throughout the day? What if different patterns could be knit into a garment in order to activate an augmented reality (AR) application on a mobile phone? These are just a few examples of the concepts at the centre of the Pratt Institute Brooklyn Fashion + Design Accelerator's [TEK-TILES](http://bkaccelerator.com/bfda-tek-tiles-center-for-activated-materials/) project.

The project aims to create a library of 30 smart textile swatches this summer. In this project, "smart textiles" combine materials exploration with electronics prototyping. In order to generate 30 smart textile swatches, during the first half of the 10-week project, the [TEK-TILES team](http://bkaccelerator.com/tek-tiles/) is generating many more possible ideas, combining them together and creating multiple iterations to determine the most interesting swatches to pursue in the coming weeks.



<https://i2.wp.com/thecurrentdaily.com/wp-content/uploads/2017/07/BFDA-1.jpg?ssl=1>

Zee Cesare (left), a programmer in the BF+DA p.lab, meeting with Z. "Teddy" Xiong, an industrial design student from Pratt Institute

For example, the group has been finding ways to embed the kinds of features that are typically associated with computers and electronics – buttons, touchscreens and switches – with those commonly linked to fashion, garments and textiles such as snaps, zippers and hangers.

In addition to

integrating the materials and electronics components, the swatches will be produced using the BF+DA's Shima Seiki [digital knitting machines](http://bkaccelerator.com/make/knit/) (<http://bkaccelerator.com/make/knit/>) in order to demonstrate their capabilities. In line with the BF+DA's focus on sustainability and responsible technology, digital knitting machines offer interesting possibilities in terms of their ability to knit entire garments into one piece. This removes the need to sew together various separate parts such as the arms on a sweater. But, the use of digital knitting machines also requires that the team learn to translate their ideas into specifications that can be understood by the BF+DA's p.lab team, which requires creating a new language for both teams to use.

In order to explore the smart textile concepts, it is necessary to integrate the knowledge, skills and methods from a range of engineering and design disciplines including, for example, materials science and fashion design. While the TEK-TILES team has a shared interest in problem-solving, these fields have different ways of approaching the design process.

For example, Maia Butterfield, a materials science major at Lehigh University, had not thought about design until joining the TEK-TILES team. She describes the engineering design process as: 1) concept generation, 2) sketching, 3) prototyping, and 4) testing.

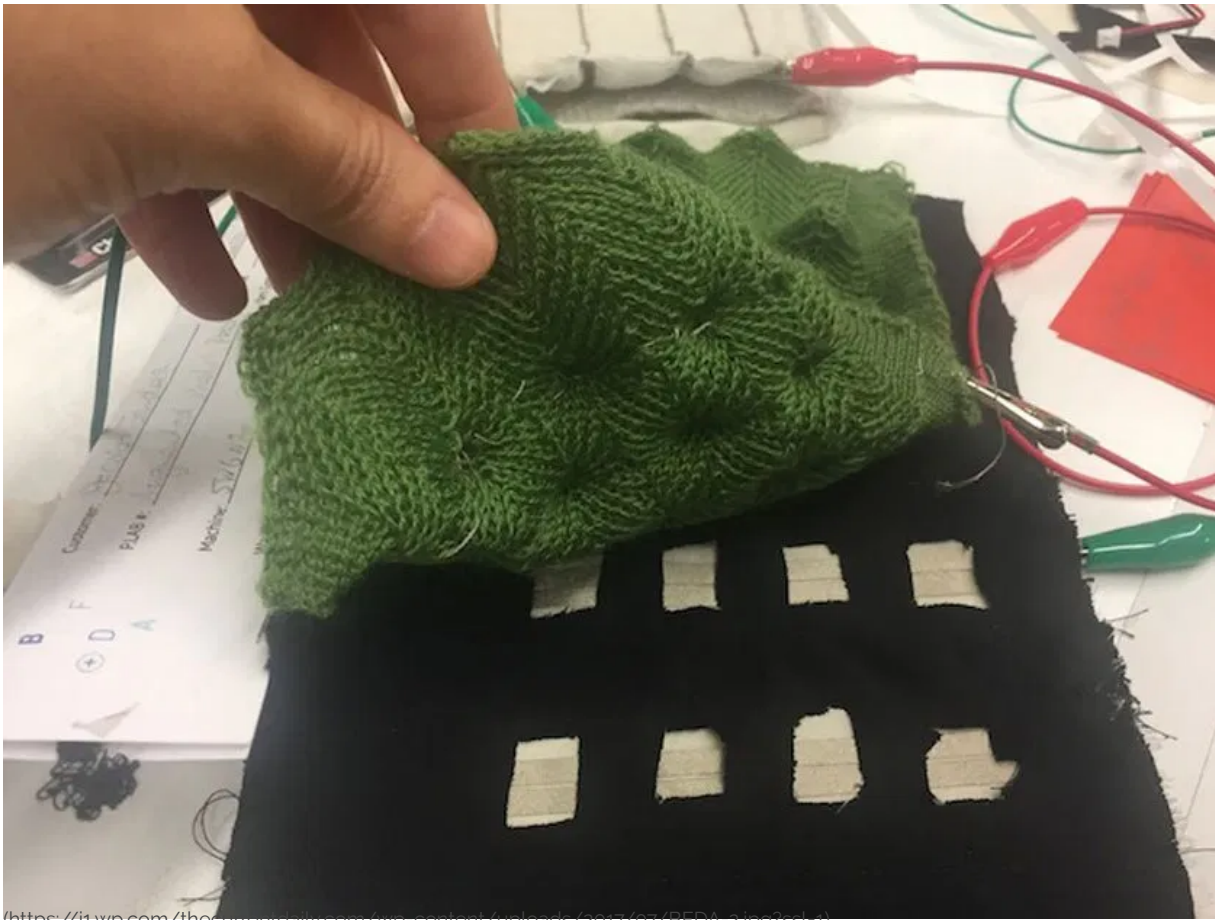
"Collaborating with my teammate Perri Vaaler, makes it easier for me to contribute to the much more conceptual and open-ended design process that the team has been engaged in during the first half of the project," says Butterfield.

In contrast to design processes that focus on solving a clearly-defined problem and client needs, Julian Goldman, an industrial design graduate from Pratt, describes the design process that the TEK-TILES team is using in the first half of the project as one of "exploration for exploration's sake."

This exploration has been primarily driven by the qualities and possibilities present in available materials such as different kinds of synthetics and natural fibres as well as electronic components such as conductive threads, sensors, LEDs and batteries.

According to Evan Huggins, another industrial design graduate from Pratt: "When you are not trying to solve a problem, you might find a solution that you might not have come up with [otherwise]."

In addition to the challenges of integrating knowledge from engineering and design, the TEK-TILES team is also reflecting on the ethics of their design decisions. For example, what might be the energy implications of smart textiles in terms of environmental sustainability? Who will have access to data that is collected by sensors that are embedded in garments and how easy or difficult will it be to gain access to the data? Are smart textiles implicitly co-opted into particular models of the economy that make the quantification, tracking and measurement of one's health necessary or inevitable (or might they resist these impulses)?



<https://i1.wp.com/thecurrentdaily.com/wp-content/uploads/2017/07/BFDA-2.jpg?ssl=1>

TEK-TILES team member Evan Huggins illustrates the integration of fellow teammate Aaron Nesser's green knit structure (top layer) with the electronic LED grid (bottom layer)

During the second half of the project, the TEK-TILES team will be continuing their explorations but also working directly with partner organisations on specific, more focused concepts around the themes of monitoring, connecting and activation that respond more directly to human needs.

The concepts will be showcased in an exhibition titled "[Fabric of](#)



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Sandra Atakori (left) discussing augmented reality during a critique session with Pratt faculty member Joseph Morris

Cultures: Systems in the Making. (<http://fabricofcultures.qwriting.qc.cuny.edu/exhibitions/>)" at the Queens Museum, which opens on October 5 through December 15, 2017.

This article was first published by Laura Forlano on the website of the [Pratt Institute's Brooklyn Fashion + Design Accelerator](http://bkaccelerator.com/) (<http://bkaccelerator.com/>), which mentors triple bottom line businesses that connect financial success with sustainable supply chains and ethical labour. Its production lab is a source for local and sustainable apparel manufacturing and an R&D centre for the design and production of smart garment and functional textiles.



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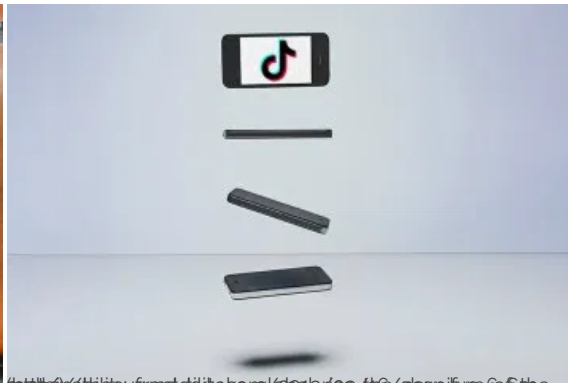
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