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Local woman gains national attention for her innovative 'techstyles'

by Audry Bartholomew
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There is a woman in Cambridge, Mass., thinking about what a conversation between a curtain and a handbag might be like, and of how she can make it happen.

The New Scientist was the first to pick up the story. Then followed *The Guardian*, CNN, CNET, a German magazine called *Focus* and newspapers in Belgium, India, China, Australia, Taiwan and Vietnam.

The woman making handbags–and headline news–is Gauri Nanda, Oakland County native and second-year graduate student at the Massachusetts Institute of Technology (MIT) Media Lab.

Her "smart bag" is a technological device that not only redefines the term "user-friendly," but that is its user's friend.

The smart bag can warn her if she is about to leave her apartment without her wallet or keys and track down the objects if they are lost.

The 'smart bag' can remind its owner of an important meeting, give fashion advice and even flash NASDAQ quotes.

It can also deliver the weather forecast by soliciting information from the humidity sensor on its fellow smart curtain. It might deliver the news of an impending downpour by saying, "Sorry, Gauri–looks like rain. Go get our umbrella."

And if, after deliberating with her scarf and pants the smart bag determined they didn't match, it can tell her, "We think you look ridiculous."

This cheeky little handbag can do just about anything, but it will only do what you tell it to. In fact, you have to build it yourself out of smart fabric. (This concept was aptly coined "B.Y.O.B.," short for "Build Your Own Bag.")

But just what is smart fabric?

Picture Legos. Now, picture them as soft, fluffy pieces of fabric. Now picture them as a system of computerized fabric blocks, each fabric "block" with the ability to perform a specific function. One block might have a light sensor that can communicate with other "light" blocks to illuminate the object they are a part of (e.g. the bottom of a purse) when it gets dark outside. Another fabric block might be embedded with a microprocessor that can connect wirelessly with a remote computer to check the stock exchange or a checking account.

The square or triangular fabric blocks can be joined together using Velcro that has been modified to enable physical as well as electrical connections so that data can flow from one module to the next.

In layperson's terms, this means, "you can put the blocks together in different ways to create any number of information-providing objects. You can wear it as a scarf today, and a belt tomorrow," Nanda's advisor Dr. Michael Bove explains.

But you don't have to understand the technology behind the blocks as you are building with them, or even have to learn how to use the system once it is built. In

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fact, building your own bag is more like playing than programming.

"Basically, we are thinking of computers in a new way. Traditionally, technology is very difficult to use. There is too much to learn and too much to carry. If you've got a laptop, cell phone and palm pilot, that's three separate computers you have to buy, master and tote around. We have embedded all the applications these different devices perform into objects we already use, like handbags, scarves, curtains, etc. This way, the interaction between the computer and its user is more natural," said Nanda. "My feeling was that a lot of people don't necessarily know how to get the NASDAQ from their laptop as they are sitting on a park bench; but they do know how to use a handbag. The handbag can learn about their lifestyle, that they want to know the NASDAQ every day at noon. So the bag can just flash the NASDAQ on a display without the user actually searching for that information."

After it is assembled, the bag performs its jobs without direction. There is no software to install and no interface to learn. The smart bag gives you the information you need from the outside world without you having to figure out how to make the bag get it. In a way, the bag anticipates its user's needs.

You can even give the bag a bath.

"Each fabric block is encapsulated so that it is waterproof and washable. This makes the objects that can be built from it really durable. You can literally throw these electronic components into the washing machine. The smart bag is one of the few computers that you can wash and wear," said Nanda. "And it is the only one you can

build, then rip apart and reconfigure so that it always meets your technological and style needs.

Nanda is currently developing plans to expand the utility of the smart bag,
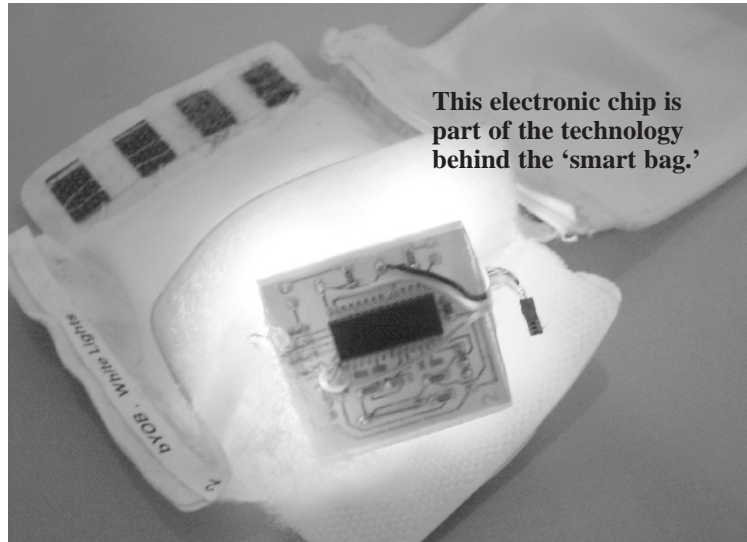
This electronic chip is part of the technology behind the 'smart bag.'

and she says the possibilities are endless.

"I was reading about these heart rate sensors that can distinguish between when

Gauri Nanda invented the bag.

you are exercising and when you are fleeing an assailant. So now we are thinking of putting that kind of sensor in the handle of the bag. I like that idea. The bag could dispatch your boyfriend–or better, 911. This way the bag not only makes life easier, but also makes you feel safe,"

said Nanda.

As for when the smart bag might become commercially available, Nanda predicts it won't be long. "It's hard to say exactly when this technology will hit the market," she said. "It's easy to use and easy to make, and there is already some corporate interest. We have really been overwhelmed with the attention the bag has gotten in its infancy stage."

The smart bag is designed with the technologically un-savvy in mind, but once it is commercially available, will the cost of such a technology prevent the average Janes out there from acquiring it?

"Absolutely not," says Nanda. "We've focused on using inexpensive electronics so that when the technology becomes available, it won't cost you more than a leather handbag would. The bag will be within everybody's reach."

In the quiet hours of the night, hunched in a modest cubicle in her lab, there is a woman dreaming of a world where she can literally put a computer in her pants. She dreams of soft computers wound around her neck, hidden in her handbag. She envisages a world where we can be our own computer terminals.