Rakshak Talwar may be a mere freshman by University of Houston standards, but he’s already well on his way to becoming a giant in the technology world.

Talwar, an electrical and computer engineering major in the Cullen College of Engineering, is the inventor of the Programmable Capacitor. Traditional capacitors are so ubiquitous that it’s difficult to find an electronic product that doesn’t use one. However, one big drawback to these energy-storing components is that one-size-does-not-fit-all; that is to say, you need a different kind of capacitor for different kinds of electronics. But Talwar’s Programmable Capacitor is adjustable to over four billion value combinations, making it compatible with virtually every circuit imaginable -- and it only costs $25.

To get production on his capacitor underway, Talwar started up a campaign on Kickstarter.com, a website used by independent inventors and creatives to fund startup projects. Talwar initially asked for $3,000 from backers to get production rolling on his capacitor. In a span of 15 days, he earned more than double what he asked for: $7,445. He originally planned to produce an initial batch of 100-200 capacitors, but with the extra money, he’ll now be filling 233 orders.

A tinkerer from birth and an inventor by nature, Talwar had been creating circuits for only a few short months...
before he came up with the idea for his capacitor. The advantage to his one-size-fits-all capacitor is instead of searching for loose parts specified to fit only certain values, inventors can rely on Talwar’s one compact board for all of their circuits, reducing both cost and wasted time. He hopes that it will appeal to not only professional engineers but educators as well. According to Talwar, the “Programmable Capacitor” simplifies the circuit-building process so much that children in elementary school could build them.

It’s a revolutionary invention that could change the way circuits are made, but Talwar doesn’t brag. Inventing is really the only thing I can do that makes me happy, he said. It’s obvious he is skilled as well. The design for his capacitor hasn’t needed any functional changes since its inception -- only design changes to make it more ergonomic.

Perhaps more fascinating, however, is Talwar’s devotion to open sourcing his inventions. Instead of racing to patent his invention, he secured a creative commons license. Once his initial 233 capacitors ship, his design files will be available online for free. Anyone who wants to build upon his idea must keep their design files public as well, thanks to his creative commons license.

“I’m not trying to step on anybody’s toes; I’m trying to stand on shoulders. And I want people to stand on my shoulders. That’s what Isaac Newton did with Galileo’s invention. That’s how humanity progresses,” Talwar explained. He said he has no problem with people taking his ideas and manipulating them to their liking. In fact, it’s what he set out to do: I want to make a simple product that you can mess with. Talwar said collaboration with other inventors and the decentralization of technology is what will lead to the advancement of the technological world as we know it.

Talwar believes his massive Kickstarter success is empirical evidence that he can eventually make money off his inventions without patenting them. The idea of never earning large profits doesn’t seem to bother him, though. “[Steve Jobs] is my biggest idol. He said and I completely agree with him — I don’t want to be the richest guy in the graveyard when I die. I want to go home every night and say I did something wonderful.”

Talwar said the choice to attend the UH Cullen College of Engineering was easy. It was a gut feeling. I felt like I was going to meet people here that I wouldn’t necessarily meet somewhere else, he said. I think people here are motivated. He has only been a student at the Cullen College for a few months, but he hopes the environment will foster his creativity. We have an entire population in other parts of the world that can do a lot of our jobs for us for less than a fourth of what we’re asking for. What makes you so significant? Why are you so special? It’s because you can create. If you can’t create, then you are going to be replaced by a machine.

He’s still got plenty of time to make his mark in the Cullen College of Engineering, but Talwar doesn’t have a four year plan. Instead, he’s concentrating on the same mission he had since well before becoming a Cougar: My biggest focus is on inventing and helping people.

© University of Houston Cullen College of Engineering