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TODAY

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# sitar TREK

AJAY KAPUR HAS AN  
UNUSUAL ACCOMPANYING  
ARTISTE AT HIS RECITALS:  
A 12-ARMED ROBOT



Ajay Kapur married an interest in engineering with Indian classical music to create a unique experience



BY MANPREET K. SINGH

**W**hat could science fiction possibly have to do with Indian classical music? Ajay Kapur can tell you. The American-Punjabi has created a robot that accompanies him on stage when he plays classical Indian ragas on the sitar. The sitar is fitted with sensors, which the robot first decodes. It then plays the accompanying music just as an artiste would—the only difference is that the robot plays 12 different instruments at the same time.

The 28-year-old's passion to blend robotics with classical Indian music has taken him on a remarkable journey as he and his robot (which he calls the MahaDeviBot) take music to new frontiers where no man (or robot) has ever gone before.

The MahaDeviBot has 12 arms, each of which plays a different instrument, including five different drums, finger cymbals, tambourine, gong, ghunghroos and a mandir bell that belonged to Kapur's grandfather. Each drum is struck by a hammer, which is activated by the sensors on the sitar. Kapur explains: "The robot will only play music when I play my sitar. It moves certain arms depending on which note I play. The robot is sensitive to pauses as well, so if I stop for one or two seconds, the robot knows it can play louder or more complicated music when my sitar is silent."

Taking his innovation a step further, Kapur has now started to wear three sensors on his head as well. Depending how he moves his head—up, down or sideways—the sound effects change; there could be a filter effect, a swirl or echoing. "Whenever I come to this part of my performance, I take 20 minutes to explain to the audience what I'm going to do. Just by moving my head a certain way, I can add many sound effects to my music which are then projected through multimedia projectors too. It's as if I've painted a landscape with different

colours, dried it, and projected it to my audience—all in real time," says Kapur. "I know this sounds crazy, but I'm passionate about digital Indian musical instruments and I believe we've started a serious movement to explore artistic excellence."

Kapur's parents migrated from India to the US in the 1970s and he was born and brought up in Connecticut. According to him, "although my sister and I were brought up in a typically Punjabi atmosphere at home, we didn't have much Indian influence outside our house, let alone Punjabi influence".

From age eight, Kapur learnt to play the drums, mostly as a jazz drum set player. But things changed when he went to University and met lots of people with an Indian background. "I used to play the drums in college but something just didn't feel right," he says. Kapur took a trip to India and went to the Allah Rakha Institute in Mumbai to learn the tabla. "I enjoyed it a lot and since I had an affinity for electronics too, I knew I wanted to make an electronic tabla," he says. The musician went back to India again, this time for much longer, and spent months learning the sitar. "I just fell in love with it and everything seemed to fall into place."

On the one hand, Kapur wanted to pursue a career in engineering, but on the other he had discovered a passion for Indian classical music. "I couldn't find a course that would help me do both, since there was such a clear dichotomy at university. That's when I met my professor, my

"I can't believe that my dreams which sounded insane a few years ago have come true."



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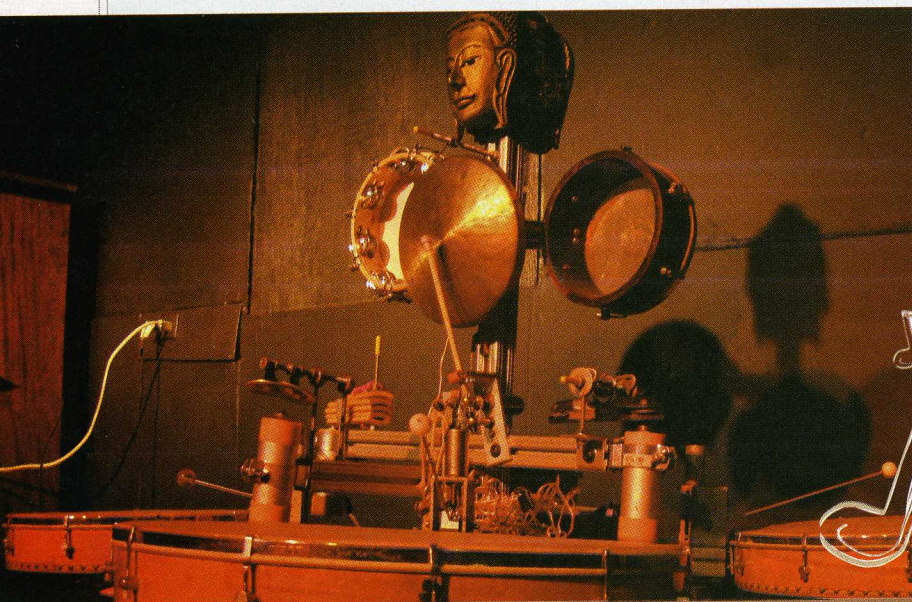
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## profile



The MahaDeviBot has 12 arms, each playing a different instrument

saviour, Perry Cook, at Princeton University, who became my mentor and my guide. He had fitted computer sensors on a coffee mug and was playing music with it. I said to myself: 'This is it. This is what I should do', says Kapur.

He then went to the University of Victoria in Vancouver Island (Canada), where he studied subjects as varied as computer science, mechanical engineering, and music, and went on to do a PhD. For his thesis, he wanted to incorporate all the subjects he had studied and decided to play the sitar to an electronic tabla. And that's how the idea of MahaDeviBot was born. "I can't believe that my dreams which sounded absolutely insane a few years ago have come true. The evolution of that idea has been truly amazing," says Kapur.

When the musician-scientist

performed with the robot on stage for the first time in Singapore, he was unsure of what to expect from the audience. At that stage, his MahaDeviBot had only four arms. The positive response inspired him to turn the robot into a 12-armed machine, giving it a goddess-like image (and hence the name). Kapur gave his robot a Buddha face, and the evolution was complete.

"The goal is to create music which is not humanly possible," says Kapur, now busy with his second musical robot, the GanapatiBot, which will have multiple arms for each musical instrument. He has also started a record label and multimedia label called KarmetiK, which brings many artists, scientists and musicians together, in an endeavour to create new frontiers in music. "I started this as a move-

ment with my friends Satnam Minhas, Manjinder Singh Benning, Jesse Brown and Curtis Bahn; we are exploring new possibilities of putting sensors on different musical instruments," says Kapur, who is also the music technology director at the California Institute of Arts in Los Angeles.

Currently touring Australia and New Zealand, Kapur has already performed in the US, Canada, Ireland, Italy, Portugal, Denmark and Japan. Last year, he performed in India for the first time, which he says was an exhilarating experience.

Describing his concert at the India International Centre in Delhi, Kapur says, "I had my eyes shut tight throughout because I was scared people would come up to the stage and kill me! When I dared to open my eyes, I was amazed to see that many people had surrounded me and the robot, staring at us in complete awe. That was amazing!" That acceptance was important to Kapur, as he says: "Although I'm American, a permanent resident of Canada, and travel around the world, my identity is definitely Indian. I am who I am today because of our culture." As for his Punjabi roots, it's all about the food: "I love *saag paneer*. I'm really missing that and my mum's Punjabi cooking because I travel so much."

And so this musical gypsy and his raga robot go about their merry journey, mingling science and performing arts, merging ancient tradition with modern technology. We wish him well on his Sitar Trek. ■



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