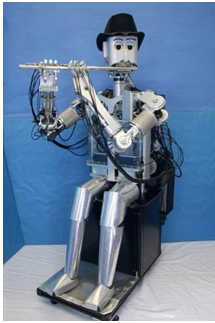


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By: Dan Talpalariu, Science Editor



Japanese robot playing the flute
dailymail

[A Robot Plays "Flight of the Bumblebee"™](#)

This is the 4th version of the robot

A new version of a [musical robot](#) that plays the flute perfectly could soon turn out to be a worthy competitor to human musicians. Besides the fact that it makes no mistakes, the latest technology allowed its developers from the Waseda University in Japan to equip it with cameras that act as eyes, ensuring a dynamic contact and interaction with its public, just the way regular musicians do when they're on stage during concerts.

The robot, called Waseda Flutist No. 4 Refined IV (WF-4RIV), designed to be able to play the difficult musical score from the "Flight of the Bumblebee" on a flute, was recently observed displaying its skills during the BioRob 2008 conference, held 2 weeks ago in Arizona. Compared with the previous model built 6 years ago, this one is capable of providing a smoother transition among fast-succeeding notes, while it is also provided with a contrivance that enables it to add a vibrato effect to the sounds.

This skill is very hard to learn for human flautists, as it can even take them years to successfully master the technique. Just like its human counterparts, the robot uses the mechanism to control its airflow frequency and amplitude. The lips are just as soft and bending as a human's, and the pins inside them determine their shape. The mouth and the acrylic bellow-lungs were devised in accordance with careful observations on the way human flute players control the air, whereas the robot's tongue was conceived in such a way as to allow it to perform the double-tonguing technique, needed during the interpretation of the difficult song.

All the equipment installed on the robot brings it closer to the way humans approach flute singing and stage behavior, enhancing the possibility for such robots to be integrated in human concerts. Ever since 1990, the Japanese developers have been striving to create a viable version, and the 2 decades of efforts seem to have paid off. They hope it's now just a matter of time before the WF-4RIV is able to teach flute playing to humans and, perhaps, aid the ongoing process of [human-robot communication](#).