

A Magical Keyboard

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A college student's experimental keyboard may help unlock the musical ability trapped inside individuals lacking the physical mobility to play traditional instruments. The keyboard was created by a Rensselaer Polytechnic Institute senior, [Zane Van Dusen](#), to be easy to use and inexpensive to set up. It relies on the basic Webcam that comes with many new personal computers, and allows users to choose a body part—typically the tip of their nose—for the camera to track. Software links the movements of that body part to a connected keyboard that makes the music.

Children with severe cerebral palsy have been successfully testing the keyboard system. That neurological condition often causes involuntary spasms, making it especially challenging to get the software and camera tracker to work. But the children have been able to use the keyboard successfully and have found it therapeutic, Van Dusen says. "Many of the children were more focused on their movements because they were motivated by the sounds they were creating," he says. One student has used the keyboard to jam with other musicians over the Internet.

So far, the system has been used to produce piano sounds and percussion, though a fully synthesized orchestra could follow. Wide commercial distribution is probably several years away, says Van Dusen, who has graduated and is now working on Wall Street. Researchers at RPI, led by Van Dusen's former research professor, Pauline Oliveros, continue to refine the tracking device and are trying to broaden the scope of the project to include games and robotic instruments that would operate off of the same keyboard and tracker. That would be sweet music indeed for the disabled.

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