

Algorithm Turns 8-Bit Art into HD Vector Graphics

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[Photo: Depixelizing Pixel Art]

I love gaming on an HDTV, but I still keep an old CRT around just so I can play some Genesis or Nintendo games, because 8-bit graphics blown up in resolution by three times just look bad. But two researchers and their algorithm could change that: It depixelizes and upscales low-resolution 8-bit pixel art into some slick vector graphics.

The algorithm, developed by Johannes Kopf of Microsoft Research and Dani Lischinski of **The Hebrew University**, analyzes the pixels and adds spline curves to the contours of the images. To get technical: the algorithm figures out the connections between the pixels and reshapes the cells so they connect with their surrounding neighbors in the cardinal directions as well as their diagonal edges.

Basically, it rounds out square edges and removes the staircasing artifacts seen when pixels are magnified. The results are pretty good, smooth but still retaining part of the original art, and they look better than “smoothing” options—or just plain blurring—when playing an old game on the Xbox 360 or PS3.



[Photo: Depixelizing Pixel Art]

Of course the results are not perfect, just check out the way Yoshi's neck has been clipped and Mario looks like he went through a Picasso blender. While the researchers say that their algorithm is computationally complex, they added with some optimization, it could be built into an emulator to upscale retro games in real time.