TOOLBOX

THE RESEARCH HARDWARE IN YOUR VIDEO-GAME SYSTEM

Motion sensors don't just drive gameplay. With the right software, they can scan dinosaur skulls, monitor glaciers and help robots to see.

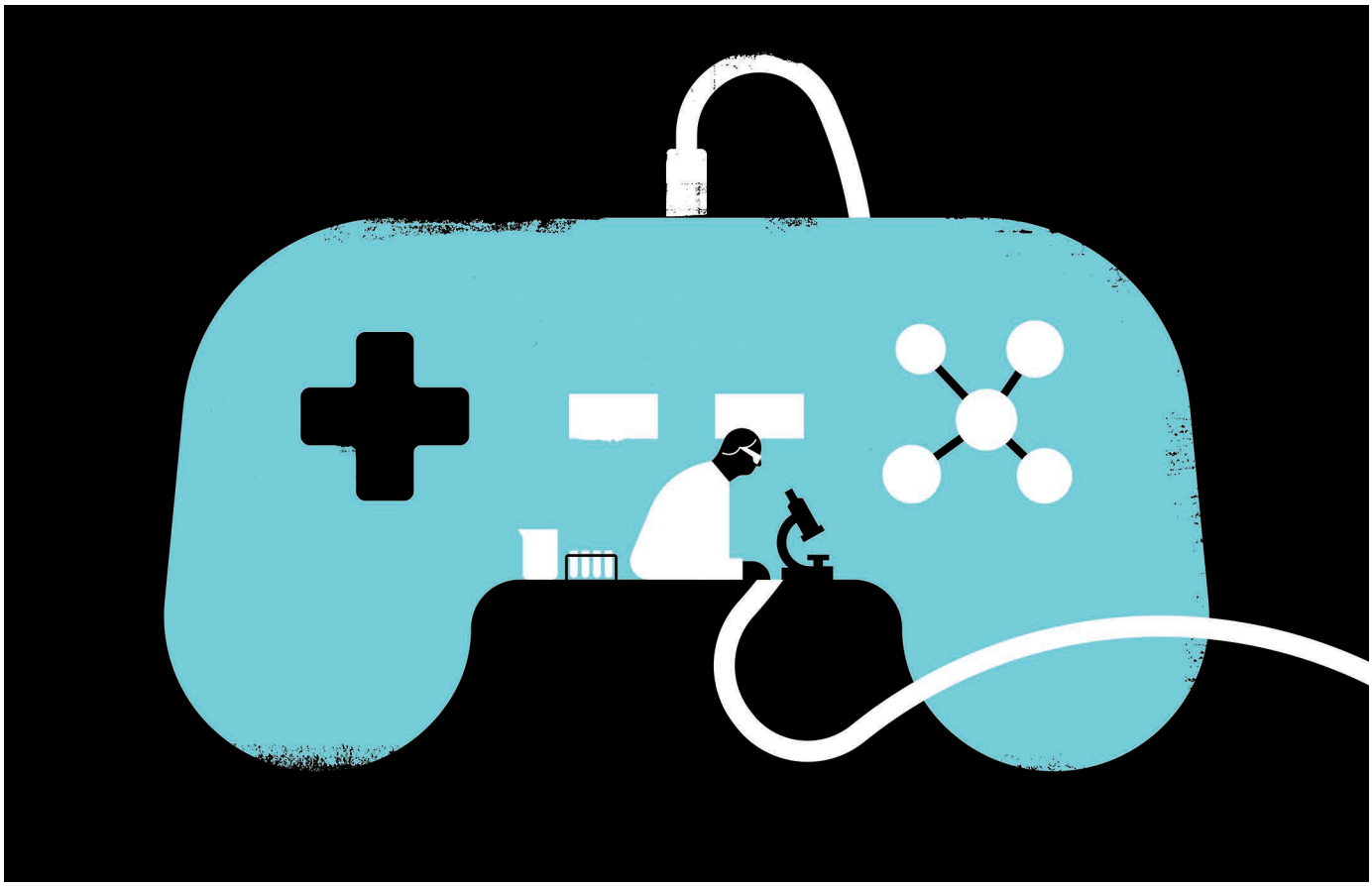

ILLUSTRATION BY THE PROJECT TWINS

BY ANNA NOWOGRODZKI

A man with a black rectangular bar strapped to his chest walks a careful circuit around the skull of a *Tyrannosaurus rex*. It's not performance art. The black rectangle is a motion sensor called Kinect, and its wearer is using it at the Field Museum in Chicago, Illinois, in to digitally capture the precise 3D shape of the dinosaur's skull.

That's a far cry from its developer's intended application. Microsoft designed it for use in video games, enabling Xbox users to control their characters using movements and gestures rather than a handheld controller. But from the moment it was released, scientists and clinicians have been adapting the device, and other sensors including the Nintendo Wii Remote, PlayStation EyeToy and Leap Motion, to aid research in areas from robotics to glaciology to health care. They were quick to realize that the data the devices gather can be used for studies that involve measuring body movements, manipulating 3D objects or observing or building models of 3D spaces.

The sensors come with a number of perks for scientists: they are affordable (most cost US$80–100), portable and compatible with free and easy-to-learn software. That makes them a nimble choice for many projects.

But they do have significant limitations. Their specifications, such as resolution, tend to pale by comparison with industrial hardware, for instance, and the systems work better in living rooms than in the field. And their usefulness depends heavily on the type of research being performed.

DINO DENTISTRY

Denise Murmann's experience with Kinect as a research tool began in 2016, when she visited the Field Museum with her family. While ▶