

# Biomechatronics lab develops a language of touch that can be "felt" by computers and humans alike

April 7 2015, by Miles O'brien

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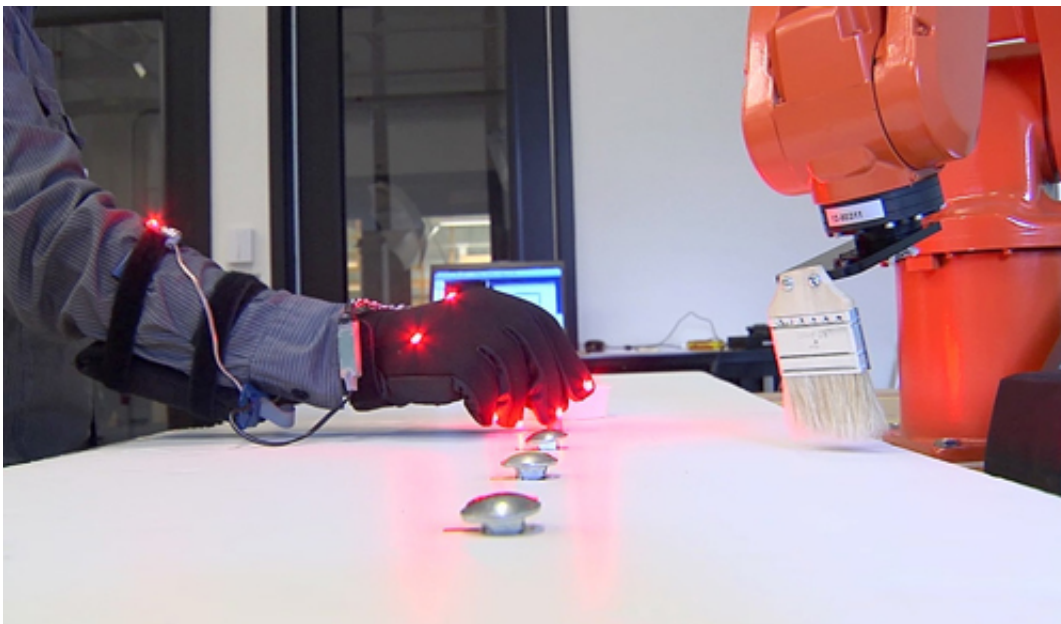
In industry, fragile or difficult-to-grip items require a delicate touch. That's why Empire Robotics, funded by the NSF Small Business Innovation Research program, is bringing the VERSABALL to the marketplace. The VERSABALL is a spherical robotic hand filled with granular material that conforms to and grips objects. At the 2015 Consumer Electronics Show, Empire Robotics displayed its innovative soft gripper technology by out-competing human challengers with precision ping pong tossing. In this video, Empire Robotics co-founder John Amend explains how the technology can benefit industry. Credit: National Science Foundation

Research engineers and students in the University of California, Los Angeles (UCLA) Biomechatronics Lab are designing artificial limbs to

be more sensational, with the emphasis on sensation.

With support from the National Science Foundation (NSF), the team, led by mechanical engineer Veronica J. Santos, is constructing a language of touch that both a computer and a human can understand. The researchers are quantifying this with mechanical touch sensors that interact with objects of various shapes, sizes and textures. Using an array of instrumentation, Santos' team is able to translate that interaction into data a computer can understand.

The data is used to create a formula or algorithm that gives the computer the ability to identify patterns among the items it has in its library of experiences and something it has never felt before. This research will help the team develop artificial haptic intelligence, which is, essentially, giving robots, as well as [prostheses](#), the "human touch."



Assembly line workers won't be swapping stories with their robotic counterparts any time soon, but future robots will be more aware of the humans they're working alongside. Roboticist and aerospace engineer Julie Shah and her team at

the Massachusetts Institute of Technology (MIT) are developing next generation assembly line robots that are smarter and more adaptable than robots available on today's assembly lines. The team is designing the robots with artificial intelligence that enables them to learn from experience, so the robots will be more responsive to human behavior. The more robots can sense the humans around them and make adjustments, the safer and more effective the robots will be on the assembly line. Credit: Science Nation, National Science Foundation

**Provided by National Science Foundation**

Citation: Biomechatronics lab develops a language of touch that can be "felt" by computers and humans alike (2015, April 7) retrieved 27 April 2024 from <https://phys.org/news/2015-04-biomechatronics-lab-language-felt-humans.html>

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