Hand Neural Prothetics

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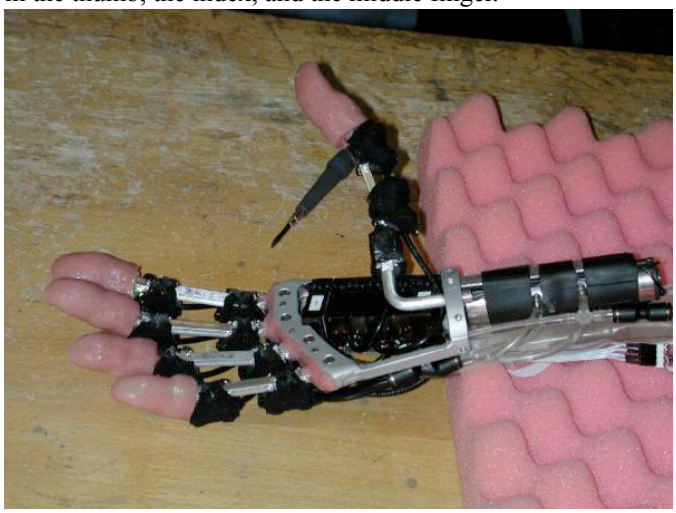
***Abstract*—Neural hand prosthetics have really progressed over the years to offer more and more degrees of freedom. However, the biggest improvement and current procedure involves the connection to nerves, and the use of new nano fibers to do so.**

I. Introduction

THERE are thousands and thousands of people who have lost hands or fingers in some way, whether it is in battle, or a simple lawnmower accident. Such people need assistance to try to make their lives as normal as possible. A prosthetic artificial hand is designed for duplicating the exact motions of the human hand. It uses nerve endings to replicate the sensory-motor abilities in the hand. Ten years ago, scientists said that commercial prosthetic hands were not close to giving the recipient the ability to grasp items. The design of the prosthetic hand was limited to the process of two or three joints, making it only possible for two "fingers" that essentially work like a hook.

II. Methods

The Prosthetic devices that are commercially made for the public have really evolved over the years. The joints are now motivated by a single motor drive acting concurrently on the metacarpo-phalangeal (MP) joints. These joints can be found in the thumb, the index, and the middle finger.



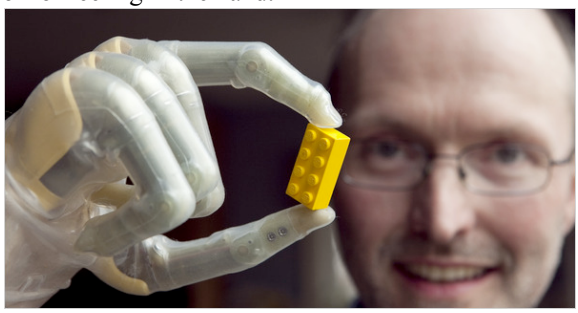
The other joints can only bend submissively. The capabilities of these prosthetics include natural grasping capabilities, natural appearance (making it look like an actual hand), secure grasping and sensory feedback, and natural command interface.

III. Results

The engineering behind this new innovation centers on Nano plastics, which are used to connect the prosthetic hand to nerve endings. What happens is that the nerves are too severed to work correctly, and connecting a harsh material like metal would just make it a lot worse. Scientists introduced a nano plastic that would act like a tube, and slide over the nerve ending to protect it from being damaged more, and at the same time send the electronic signals from the nerves to the prosthetic hand.

IV. Discussion

The reduction of the actuators and sensors in the prosthetic hand is called underactuation, and it makes the device cheaper to manufacture. At the same time, reducing these and replacing them with springs or elastic phalanges makes it easier for the mechanical hand to adapt. The fingers could adapt to the shape of an object that is trying to be grasped. With this blast in technology, I see that the field will be widening, and the capabilities of the prosthetic hand will be growing significantly. The future may include prosthetic hands with feeling. The same signals that transfer for the movement of the hand can also be transferred in a different manor for feeling in the hand.



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