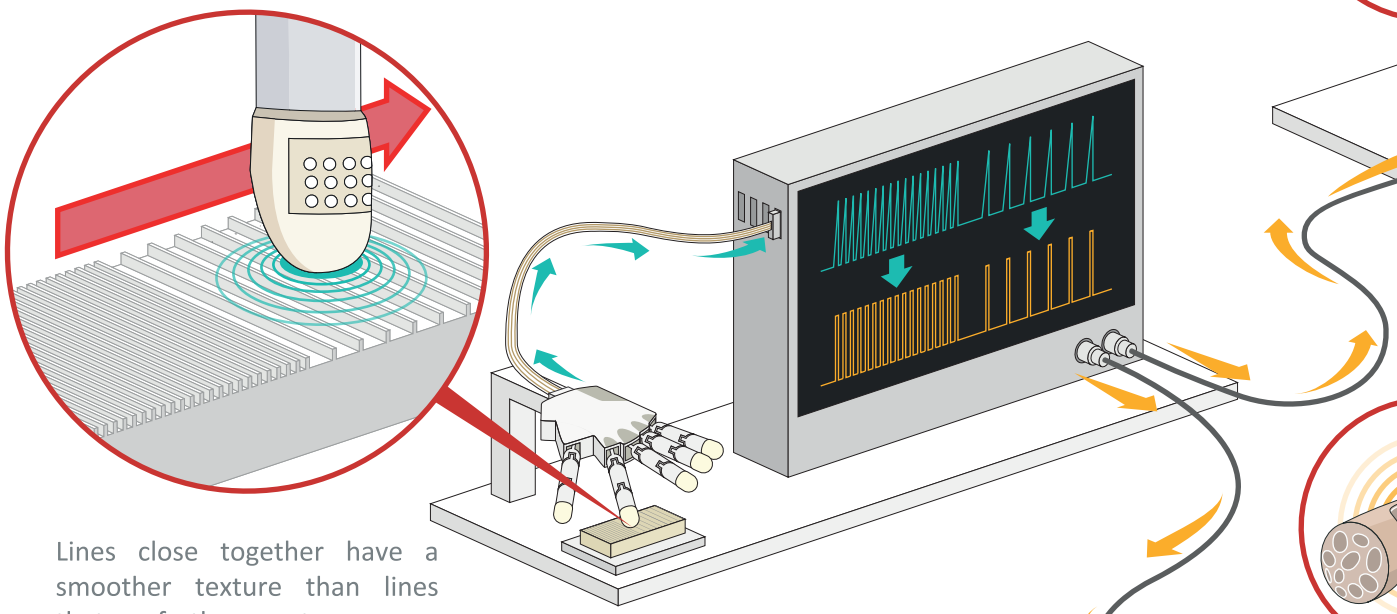
Feeling Texture with a Bionic Fingertip

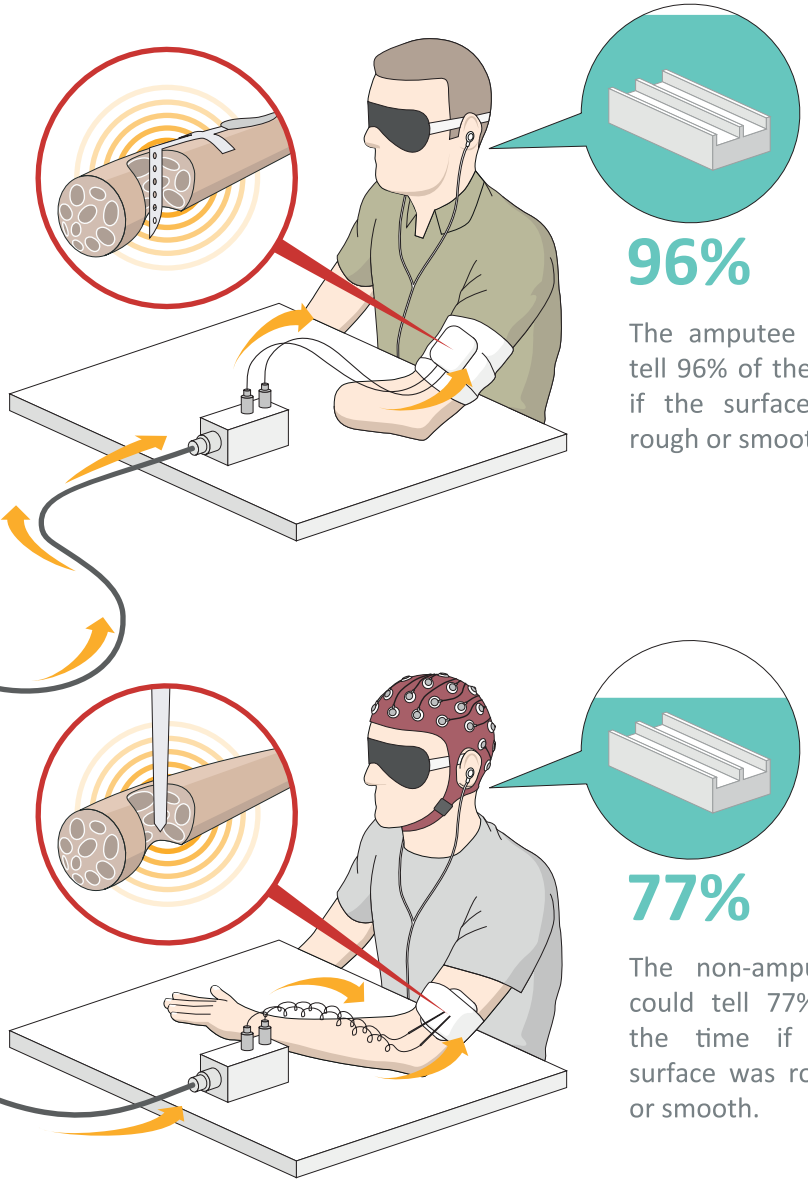
An amputee and non-amputees feel textural features in realtime from an artificial fingertip connected to nerves inthe arm.

Sensors in the fingertip generate an electrical signal by moving across the textured surface.



Lines close together have a smoother texture than lines that are farther apart.

This signal from the fingertip is translated into a series of electrical spikes, imitating the language of the nervous system, then delivered to the nerves.



96%

The amputee could tell 96% of the time if the surface was rough or smooth.

77%

The non-amputee could tell 77% of the time if the surface was rough or smooth.

Does the bionic fingertip really resemble the feeling of touch from a real finger ? Brain scans collected by an EEG cap placed on the subject's head revealed that activated regions in the brain were analogous.

ÉCOLE POLYTECHNIQUE FÉDÉRALE DE LAUSANNE

Sant'Anna School of Advanced Studies – Pisa