Robotic arm able to capture force for accurate calligraphy reproduction (w/ Video)

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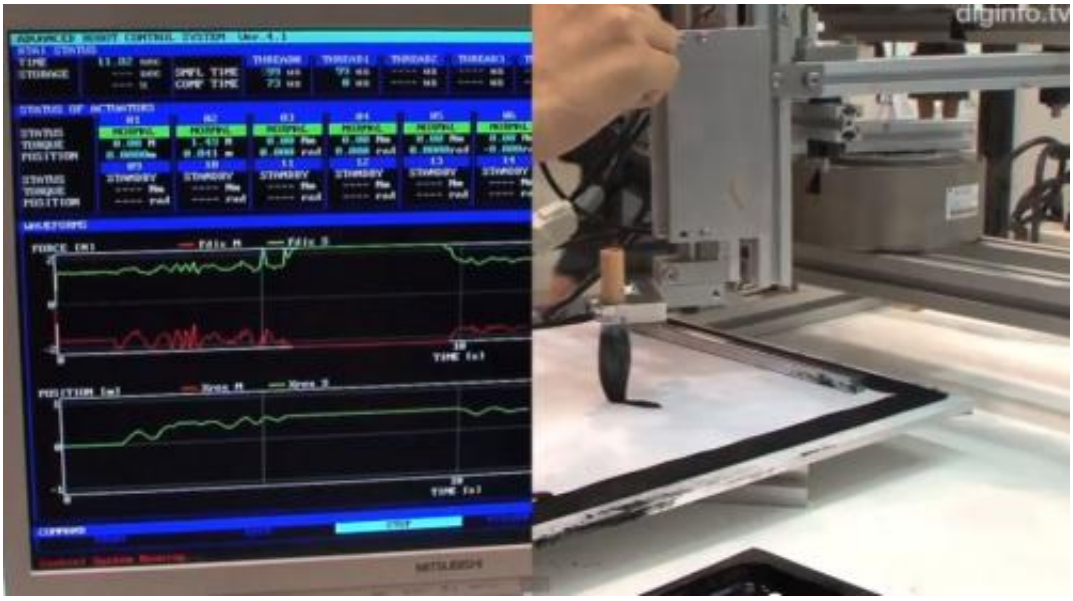

(Phys.org)—Researchers at Keio University in Japan have built a robot arm that is capable of capturing the nuances involved in the writing form known as calligraphy. The Motion Copy System uses motion capture in a new way to faithfully recreate the strokes of master calligraphers.

Up till now, motion capture machines for teaching robots to write have been based on two dimensional systems. A person holds a pen or stylus and writes words on a base tablet. The method for recreating the

characters is recorded by noting the order in which the characters are drawn or by attaching another stylus to the first and then mimicking its actions. The Motion Copy System is based on the second approach, but takes it into a third dimension.

Calligraphy is done by dipping a paint brush in ink and then using it to paint characters on a piece of paper. Creating traditional kanji characters requires more than back and forth swiping however, it also involves up and down movements of the brush to create different effects, based on the force of the hand. The new robot arm captures these force strokes by use of a new kind of capture mechanism, a brush with independent brush handle segments.

One segment is attached to the robot arm, it holds the brush head and performs the inking. The other segment is used by a human calligrapher and is held above the brush head. As characters are painted, seemingly in the air, the brush segment held by the robot mimics the action and relays information about what it is doing to its processing unit which converts it into data that can be used later to recreate the calligrapher's movements. The end result is a robot arm that can faithfully reproduce the calligraphy style of individual artists.

The researchers say their device can be used to store the different stylings of professional calligraphers to help preserve an art form that is slowly dying out due to lack of interest by young people in the country today.

The Motion Copy System was demoed at the recent Ceatec 2012 tech show in Tokyo.

More information:

via Diginfo.tv