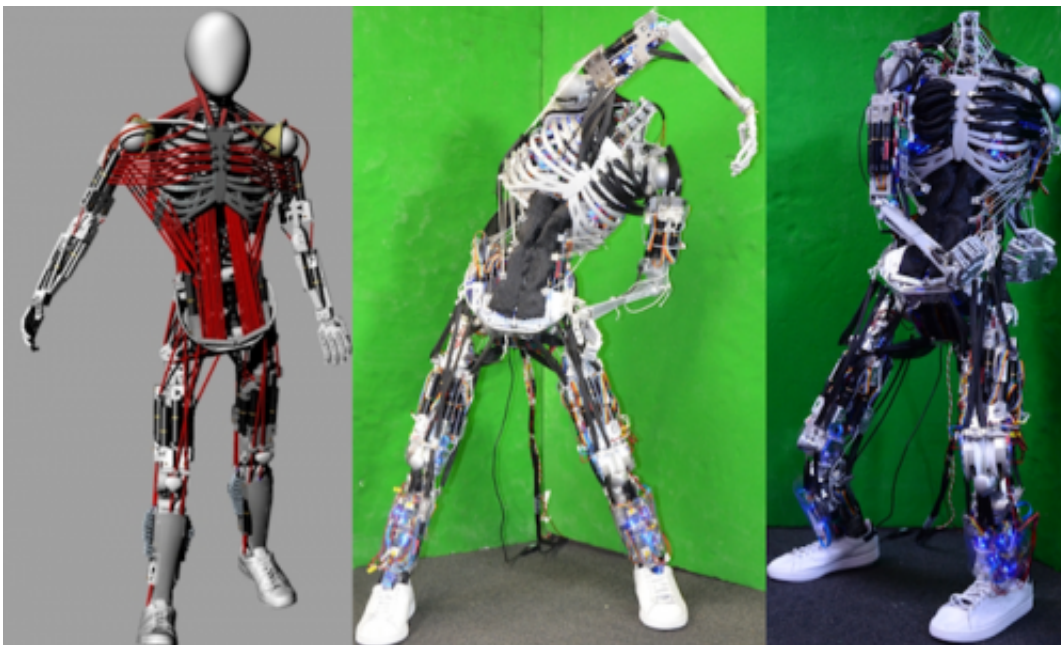


Japanese researchers build robot with most humanlike muscle-skeleton structure yet (w/ video)

December 12 2012, by Bob Yirka



(Phys.org)—Researchers at the University of Tokyo have taken another step towards creating a robot with a faithfully recreated human skeleton and muscle structure. Called Kenshiro, the robot has been demonstrated at the recent Humanoids 2012 conference in Osaka, Japan.

Kenshiro is the next step for the researchers. Their previous effort

resulted in a robot they called [Kojiro](#) – a robot that demonstrated the huge strides that have come in mimicking the human body, as well as the very long road yet to travel. In this new iteration, Kenshiro was preceded by a robot concept the team called Kenzoh. In that effort the team found that simply adding [artificial muscle](#) and bones generally tended to create weight problems. The upper body alone came to 45 kg. That caused the team to go back to the [drawing board](#), this time with the idea of mimicking human bone and muscle at the individual body part level, i.e. a backbone, calf, or knee joint. Each part was custom designed to fall within the weight parameters of actual human limbs and other parts of the body.

The result is a robot sized to approximate the average 12 year old Japanese boy – with bones made of aluminum that have been connected together in a way that very closely resembles the way [human bones](#) are connected, e.g. artificial ligaments, etc., and a collection of muscles that mimic very closely those in the human body as well. Kenshiro has 160 muscles that are constructed using a single actuator motor for individual [muscle groups](#) with each consisting of a system of wires and moving pulleys. "He" stands 158 centimeters tall and weighs 50 kilograms and at this time has more muscles than any other robot.

Though Kinshiro is a single individual robot, in action, it appears to be a collection of parts cobbled together to form a single whole. The robot can walk, but just barely. It can do deep knee bends, but the rest of the body seems out of sync. Thus, this new robot is clearly more of a research project than an attempt to build a robot that moves around like a real human being. It does very clearly demonstrate however, where the research is headed and what the ultimate goal is: nothing short of a robot that mimics the human body down to the very smallest details and moves in exactly the same ways.

More information: via [IEEE](#)

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