

# Robot snake 'Uncle Sam' now climbs trees (w/ Video)

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Image credit: Biorobotics Laboratory

(PhysOrg.com) -- Uncle Sam, Carnegie Mellon's latest robotic snake, has been taught to climb trees. The snake is the newest version of "modsnake" created by the Biorobotics Laboratory at the Carnegie Mellon University in Pittsburgh.

The snake's movements are biomimetic, mimicking movements of real snakes including side-winding, wiggling and rolling. Now the snake robot can also wrap itself around a tree trunk and climb vertically up the outside of the tree. An earlier version has previously been demonstrated climbing vertically inside pipes. The many internal degrees of freedom make the snake robots extremely flexible and maneuverable.

Uncle Sam is built using modular segments containing actuators and sensors, and the head segment is fitted with a camera. Being modular

allows the snake robot the potential to be self-assembled in the field, and also simplifies repair of the robot if sections are damaged. The modular nature also means the robot's length can be adjusted easily as needed.

Biorobotics lab researchers say much work remains to be done before the snake robot can climb any tree and slither along branches, as Uncle Sam was designed for a specific trunk diameter and a specific tree. Work will also be needed on the power supply for the robot, since at the moment it must be tethered to the power supply.

Possible applications of [snake](#) robots include locating survivors in collapsed buildings after earthquakes or other [natural disasters](#). They could also be used for inspecting bridges, mines, and any spaces too tight for humans, and for disarming bombs. Previous versions of Carnegie Mellon's modsnakes have already been tested in training exercises for disasters.

**More information:** [www.cs.cmu.edu/  
%7Ebiorobotics/serpentine/serpentine.html](http://www.cs.cmu.edu/%7Ebiorobotics/serpentine/serpentine.html)

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