

Robotic mini-quadrotors can now build towers (w/ Video)

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(PhysOrg.com) -- Robotics researchers in the US that developed mini-helicopters or quadrotors have now demonstrated them working as a team to build quite complex structures such as towers or walls.

The researchers, led by PhD candidate Daniel Mellinger of the University of Pennsylvania's General Robotics, Automation, Sensing and Perception (GRASP) laboratory, have developed miniature robotic quadrotors that can grasp and lift almost any object and fly it to where it is needed. Now the team has developed a system of building structures in which the human only needs to select a design and an algorithm then controls the quadrotors to build the structure, working cooperatively as a team.

The autonomous quadrotors each have a gripper mounted on their underside that can lift either horizontal or vertical components. Once in place in the structure, the components snap together with the aid of magnets, and the quadrotors can jiggle the beams to ensure they are correctly in position. The quadrotors work as a team via a wireless network, and the algorithm determines the order in which they lift and place the structure's components.

Mellinger said the algorithm they have developed can be used to build almost any tower-like structure and the only constraints are the availability of parts and the limited battery life of the quadrotors.

A [PhysOrg article](#) last year showed the mini-robots performing

aerobatics and feats such as flying through windows at different angles.

Now that the quadrotors are capable of building structures, this may be a first step towards full-scale autonomous flying robots or large numbers of smaller robots being used eventually for construction of real buildings. This might be especially useful in locations where construction is hazardous for humans, such as in war zones, oil rigs, or on extremely tall skyscrapers.

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