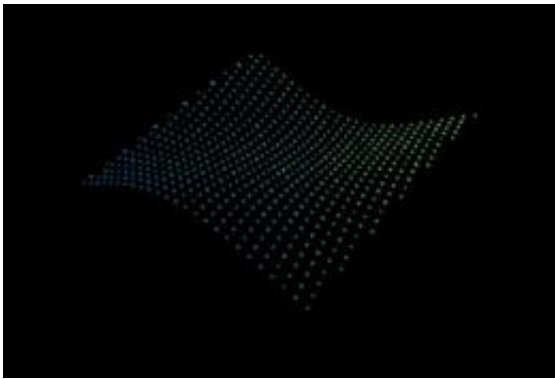


# Synchronized flying robots could paint pictures in the sky (w/ Video)

February 21 2010, by Lisa Zyga

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In the Flyfire project, large numbers of micro helicopters with LEDs act as moving smart pixels, performing elaborate synchronized motions that create an elastic display. Credit: MIT SENSEable City Lab.

(PhysOrg.com) -- In a new MIT project called Flyfire, tiny robotic helicopters with LEDs can act as flying pixels, moving together to create transient images in three-dimensional space. If it sounds like something out of a Disney animation, it sort of is.

"It's like when Winnie the Pooh hits a beehive: a swarm of bees comes out and chases him while changing its configuration to resemble a beast," said E Roon Kang, a research fellow at MIT's SENSEable City Lab who is leading the project. "In Flyfire, each bee is essentially a pixel that emits colored light and reconfigures itself into different forms."

The Flyfire project, a collaboration between the SENSEable City Lab and the Aerospace Robotics and Embedded Systems Laboratory (ARES Lab), is made possible due to recent advances in battery technology and wireless control. The researchers' goal is to transform any ordinary space into a highly immersive and interactive display environment through the use of flying “smart pixels,” or robots with LEDs. In the Flyfire concept, [swarms](#) of robotic [helicopters](#) are remotely controlled and self-organize themselves to perform elaborate synchronized choreographies.

The robotic pixels can be manipulated in real time using precise, self-stabilizing technology developed by the ARES Lab. While current technology enables the researchers to simultaneously control just a handful of robotic helicopters, they hope to scale up to “very large numbers” of synchronized helicopters.

The researchers envision the technology being used for 3D public displays, since the images can be experienced from far away and from all directions. As shown in the video, the flying pixels can generate a variety of unique free-form displays in the sky, such as spelling words, drawing pictures, and visually displaying any kind of information.

In a press release, the labs note that Flyfire could also be a step toward “smart dust,” which is a futuristic wireless network made of tiny, synchronized devices the size of dust.

**More information:** <http://senseable.mit.edu/flyfire/>

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Citation: Synchronized flying robots could paint pictures in the sky (w/ Video) (2010, February 21) retrieved 19 April 2024 from <https://phys.org/news/2010-02-synchronized-robots-pictures-sky-video.html>

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