Using a phone to fly a drone (w/ video)

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Imagine controlling an airplane in flight just by holding your iPhone out in front of you: tilting it in the direction you want the plane to travel, or raising it to make the plane fly higher. Or tapping a point on a map on the screen, and having the plane automatically fly to the designated spot.

Now, imagine if the plane itself were a continent away from where you're doing this iPhone-based controlling.

This is not, in fact, some science-fiction vision of the future — it actually happened this summer, with people at Boeing's Seattle research and development center controlling a small rotorcraft, or Unmanned Aerial Vehicle (UAV), as it flew around an athletic field on the MIT campus in Cambridge — some 2,500 miles away.

But the most significant thing about this long-distance control, explains MIT associate professor of aeronautics and astronautics Mary "Missy" Cummings — who designed the controller along with her students — is how easy it is for even an inexperienced person to fly the plane. The control system designed by Cummings and her students is so simple and intuitive that operators can take charge of flying the plane after just a few minutes of instruction. By comparison, soldiers who control existing UAVs must undergo a comprehensive, months-long training program.

Cummings, who directs the Humans and Automation Lab at MIT, focuses her research on how to make control systems that are easy for people to learn and use. In principle, she says, the control system she and

her team have created for smartphones could be used to control any aircraft, even a jumbo jet. In practice, it could easily replace the control systems not only for military drones, but for UAVs used by emergency personnel: for example, to track the progress of a forest fire in a remote area from a safe distance.

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