AEROSPACE ENGINEERING SCIENCES

Seminar

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Toward an Autonomous Airborne Scientist

Fixed-wing aerial robotic technology has advanced to the point where platforms fly persistent sampling missions far from remote operators. Likewise, complex atmospheric phenomena can be simulated in near real-time with increasing levels of fidelity. Furthermore, cloud computing technology enables distributed computation on large, dynamic data sets. Combining autonomous airborne sensors with environmental models dispersed over multiple communication and computation channels enables the collection of information essential for examining the fundamental behavior of atmospheric phenomena. This seminar describes progress made over the last decade toward the development of an autonomous airborne scientist for studying severe local storms. This autonomous scientist combines unmanned aircraft systems, meshed networked communication, autonomous path planning, cloud computing infrastructure, and online numerical weather models. The existing system architecture will be described along with results from several field deployments validating and assessing various subsystems.

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DLC