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### Where Were the Flying Robots?

By [Francesca Tarissi](#) on May 3, 2011

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It is the first question that came to mind of many of us – at least those who are interested in robotics – looking at the images of the [smoking reactor in Fukushima](#). The article “[Can Japan Send In Robots To Fix Troubled Nuclear Reactors?](#)” does an excellent job of investigating the potential of leveraging robots in situations like what we’ve seen at Fukushima. The article addressed many issues regarding the use of robots in situations and emphasizes the absence of Unmanned Aerial Vehicles (UAVs) to fly over the Japanese nuclear plant

The absence of drones in Fukushima has surprised many Scientists, including Henrik Christensen professor of robotics at Georgia Tech in Atlanta (I had the pleasure to meet and interview him some years ago about sex robots). According to the Danish scientist: “UAVs could be used to generate information from close range without risking lives”. So why didn’t they use them?

Professor [Bruno Siciliano](#), director of the Prisma Lab at the University Federico II of Naples, gave me an explanation. Siciliano’s point of view is that in recent years the Japanese were more concerned with the development of humanoid robots and ground-based models. Unlike the U.S. and Europe, apparently more concerned with drones.



DraganFlyer

In Europe, for example, a consortium of three Italian universities (Bologna, Naples and Salerno), two Swiss and one Dutch partners is working on the AIRobots projects, a project funded by the European Community within the 7th Framework Programme which started in February 2010. The goal of the AIRobots is to develop a new generation of unmanned aerial vehicles, of reduced dimension and with advanced autonomous capabilities, able to support human beings in activities that require the ability to interact actively and safely with environments not constrained on ground but, indeed, airborne. The estimated project cost is around 3,614,000 euros.

“The earthquake in Japan and the consequent nuclear emergency that recently occurred at Fukushima has clearly shown how the actual robotic technologies are unable to successfully operate in highly unstructured environments, such as the ones devastated by a nuclear accident”, prof. Siciliano says: “Ground robots, even with advanced climbing technologies, showed their intrinsic limitations to operate in environments cluttered with obstacles, collapsed structures and gaps that would require aerial capabilities”. In this context, aerial service robots can play a relevant role by allowing human beings to operate on structures at safe distance by applying and feeding back tactile and force information

"Many practical applications motivate AIRobots and inspire its research activities", Lorenzo Marconi, AIRobots Project's coordinator, explains: "The field of maintenance industry, in which big plants, such as power plants, large scaled chimneys, bridges, etc, have to be inspected by contact, is specifically targeted in the project. The aerial robot serves as a sort of "flying hand" of the operator, by which (s)he is able "to touch" the inspected facility, to handle probes by applying desired forces to the structure, and to capture visual and contact information in the same natural and efficient way as (s)he was on site".

The AIRobots research during the first year of the project has attempted to point toward several directions. The design of aero-mechanical platforms suitable to operate in the above contexts is clearly one of the hottest research topic. Rotary-wing small aircrafts, with shrouded propellers and on board miniature end-effectors, are the explored solutions that already led to the first flying prototypes.

Of course, it is a long way before seeing "flying hands" that operate in nuclear devastated plants. The limits of actual technologies, mainly in terms of wireless communication and electronics, prevent the use of robots, both ground and aerial, in nuclear environments.

"But it's my belief, however, that this is the way forward", prof.Siciliano says with decision.

Francesca Tarissi is a freelance professional italian journalist and a contributor to the Social Media Week Global Editorial Team. Follow her on twitter [@robotrix](#)

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