Dragonfly Inspires BionicOpter Flight

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The Bionic Learning Network creates technology by looking to nature for inspiration. Partnering with Festo [1], various universities, technical institutes, and development companies, the network has developed the ExoHand [2], SmartBird [3], and the Bionic Handling Assistant [4]. One of their most recent projects is the BionicOpter.

Photos of the Day: Dragonfly Inspired BionicOpter [5]

Inspired by the flight of the Dragonfly, the BionicOpter is ultra-light and can fly in all directions. With the ability to move each of its wings separately, it can also slow down, turn quickly, accelerate, and fly backwards. For the first time, a single aircraft can achieve the motion of the helicopter, plane, and glider.

The flight simulations are possible through the lightweight construction and function integration. For example, the sensors, actuators, and mechanical components, as well as open- and closed-loop control systems, are installed in a very tight space and are adapted to one another.

The BionicOpter has a wingspan of 63 cm, and a body length of 44 cm. It weighs just around 175 grams, which is possible because of its carbon-fiber frame, and thin foil covering. The flapping frequency, amplitude, and angle of incidence are controlled by software and electronics. The intelligent kinematics correct any vibrations during flight and ensure flight stability. In order to maintain stability, data on the position and twisting of the wings is continuously recorded and evaluated. Through its complexity, the pilot merely has to steer the BionicOpter with the use of a smartphone.

For more information, visit http://www.festo.com/cms/en_corp/9617.htm [1].

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[5] http://www.pddnet.com/news/2013/04/photos-day-dragonfly-inspired-bionicopter