Editorial Note

In designing flying machines, especially VTOL aircrafts, aviation engineers look up to how nature works, and it is for a good reason. Flights of birds and of flying insects are efficient at least in two aspects: aerodynamically, and power-wise. Being efficient aerodynamically is due to the ability to dynamically deform their wings accordingly to produce the desired lift at the desired direction without inducing unnecessary disturbance to surrounding airfield. This is a quality that is still lacked in most man-made VTOL aircrafts. Being efficient power-wise is simply due to their ability and capacity to fly without exhausting themselves; flights of VTOL aircrafts are known to be power consuming flights compared to fixed wing aircrafts. Driven by this reason, investigations on the mechanics of flapping wings have drawn the attention it deserves. Moelyadi, *et al*. investigated the interaction between the flapping wing as a flexible structure and the airflow around it using the fluid-structure interaction method, a method that employ the powerful finite element method and computational fluid dynamic in couple. Their results can serve as new valuable insight to how to fly efficiently like the birds do.

Flight efficiency is also about improving maintainability and reducing weight so that more usable payload can be carried. In its time, the fly-by-wire system was a major breakthrough since it allows aircrafts to be built with less weight and easy to maintain. The extensive use of wireless communication in many day-to-day applications nowadays has become a challenging taunt for aviation engineers to explore the possibility of introducing wireless communication technology into aircraft control system, not only to reduce weight but also to increase safety and system capacity. Venugopalan, *et al*. propose a method of wireless control system for aircraft braking system. The braking system is only one of many critical systems in an aircraft, but in this research area that is full of safety-critical constraints, Venugopalan's work has confirmed the promising opportunity to develop the so-called 'fly-by-wireless' generation of aircraft that is much more efficient, and safe.

The ever-growing needs and potential of UAVs in many applications, not just military, but non-military as well, will require more safety concerns in UAV flights. UAV flights are more susceptible to harsh weather than their manned counterparts due to their light-weight characteristics. To increase safety, UAV mission will have to be aborted halfway if the weather turns bad, and to do this, UAV mission has to be supported by reliable information about weather condition ahead of UAV mission time. Bottyan, *et al*. developed a meteorogical support system for UAVs. With more researches on the use of UAV for non-military purpose, e.g. cargo transportation [1], the increase concerns for safety in UAV flights will make Bottyan's works and achievement very valuable.

In another paper, Singh, *et al*. presents their research on position estimation of an UAV helicopter based on GPS and IMU measurement. Lastly, Miwa discusses an operational framework for flying cargo using multi rotor helicopter. The work extends further the application envelop of UAV into practical civilian use.

Happy reading!

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Reference

[1] Kakuya Iwata and Osamu Matsumoto, "Research of Cargo UAV for Civil Transportation", The Journal of Unmanned System Technology, Vol. 1 No. 3, 2013.