

Quad-Wing Flapping Micro Aerial Vehicle with Independent Wing Control (#5426)

A micro aerial vehicle (MAV) with improved mobility and endurance

Georgia Tech inventors have created a quad-wing flapping MAV utilizing various new design features to address issues in existing designs and limitations to commercialization. The key feature is four separate wings with independent wing control making both the design and the controls simple compared to current designs. Each wing is independently controlled by a single actuator, the component responsible for controlling motion; the ability to independently move each wing allows for movements which surpass all previous designs. Another key feature is the scheme of various software elements integrated in the hardware. These allow for micro-imaging sensors to capture aerial images as well as for a highly sophisticated autopilot mechanism.

Benefits/Advantages

- Higher energy and endurance resulting in extended flight-times and payload capacities
- Higher agility compared to previous models
- Unique control system

Potential Commercial Applications

This technology has potential in security and defense in many aspects including air-deployable surveillance, reconnaissance system and search and rescue support, border patrol, forest fire early detection, among others. Additionally, a simpler version of the technology could be applied to urban and personal security and surveillance as well as civilian law-enforcement.

Background/Context for This Invention

Micro aerial vehicles (MAV), are small unmanned air vehicles that can be autonomous. There are three predominate MAV designs which are all limited in some way, either by movement, flight times, or durability. In addition to limitations in flight capabilities current MAV designs have difficulty being integrated into large systems, allowing for information to be transferred from the MAV to a database. Thus, there is a need for a more efficient flying design as well as an integrated software system that allows for information to be easily and quickly transmitted.

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More Information

U.S. Patent Issued - [9290268](#)

Publications

For more information about this technology, please visit:

<https://licensing.research.gatech.edu/technology/quad-wing-flapping-micro-aerial-vehicle-independent-wing-control>

Images:

The automated sequential delivery of multiple fluids. A varying number of delay gates imprinted in the branches are shown in the figure.

COVID-19 and flu saliva test on paper: (A) The automatic sequential delivery of multiple reagents required for virus test; (B) Water pouring into the device triggers the virus assay, allowing the presence of SARS-CoV-2 and influenza A & B viruses to be visually identified by the color changes in the corresponding detection spot

