



TECHNOLOGY

Controllable, Mechanical Maple Seed (Samara)

OVERVIEW

Background

Unmanned vehicles are currently being used in a wide variety of applications such as security and surveillance, fire monitoring, and search and rescue. The field of auto-rotating MAVs capable of vertical takeoff and landing is a particularly active area of research. Designs in this field frequently mimic the seed of the maple tree and other biomorphic forms with the goal of developing a stable, controllable VTOL MAV. Researchers at the University of Maryland Department of Aerospace Engineering have developed new samara-type MAV designs based on research and testing techniques invented at the University of Maryland Alfred Gessow Rotorcraft Center. This research has led to the smallest and lightest known samara MAV with a mass of 9.5 grams, no dimension larger than 15cm, and the ability to hover for 10 min. The vehicle is a stable auto-rotating platform with the capability to carry a small payload.

Applications

The design is applicable to any small payload, VTOL MAV application such as:

- Security and surveillance platform
- Automated fire detection and suppression
- Operations involving "tag and track" of animals
- Remote search and rescue
- Remote control toy
- Advertising platform

Advantages

- Stable auto-rotating VTOL platform enables a wide variety of applications
- Low energy requirements for flight allows more power for payload
- Based on cutting-edge design research yielding a highly efficient design

Lead Inventors

Prof. Darryll Pines; Mr. Evan Ulrich; Mr. Steve Gerardi; Mr. Joseph Park

Stage of Development

Research prototypes of several sizes have been built and tested. Research is continuing.

Status

Patent pending; seeking commercial partner to

license technology

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Additional Information

INSTITUTION

University of Maryland, College Park

PATENT STATUS

Patent(s) pending

LICENSE STATUS

Contact OTC for licensing information

CATEGORIES

- Engineering
- Aerospace

EXTERNAL RESOURCES

- [US Patent 8,366,055](#)

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