



## • Spec

Full width	308mm
Total height	95mm
Empty weight	299g
Propeller diameter	5inch
Motor kv value	2280RPM/V



Futaba T14SG

## • Concept

By a three-dimensional printer is manufactured, a aircraft, as much as possible designed so that I might make it light-weight. To make the weight balance appropriate devised in arrangement of each part. By making the leg a design rather heavy with It's possible to do a stable landing. By using the nylon material a fuselage with the strength is made.

## • Safety

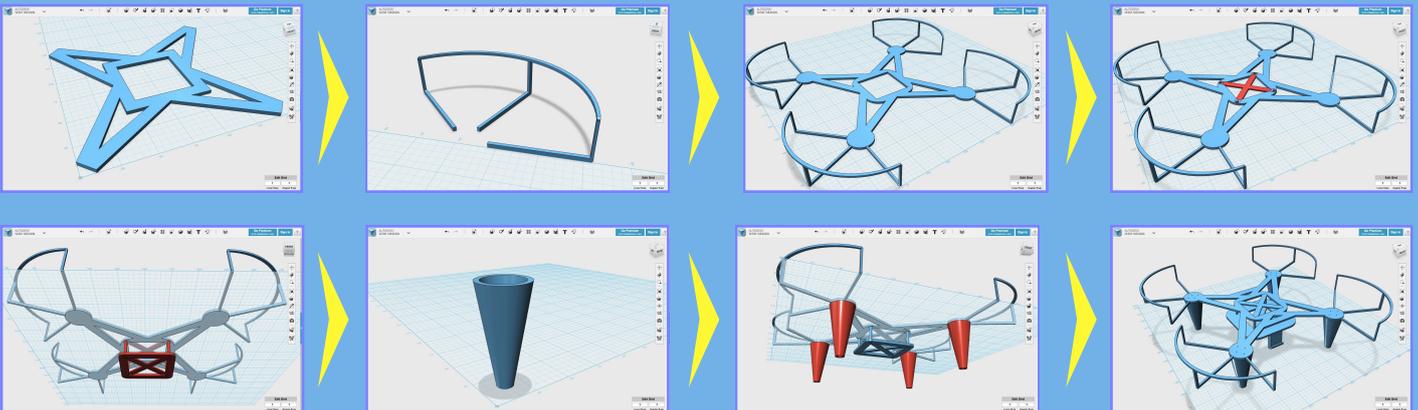
### Propeller guard

- A propeller can be guarded perfectly design in the total height and the length.
- In a body and a propeller, with designing on the diagonal line to the center, the strong body was made.

### Fail safe

- By switch off of Propo Output of a motor will be in the lowest state.

## • Production



A frame and a propeller guard are made, the body and a propeller guard are combined. Leg of the frame and the core are made, All parts are combined.

**The design period → 16 weeks**

## • Camera



ai-ball

- 300,000 picture elements
- 640 × 480 (VGA)
- Wi-Fi (Communication method)
- 300 mW (The power consumption)
- 25g (The weight)

## • Micro servo



SG-90

- 9.0g (The weight)
- 1.8kg/cm (The torque 4.8V)
- 0.1sec/60° (The speed 4.8V)
- Plastics (The gear type)

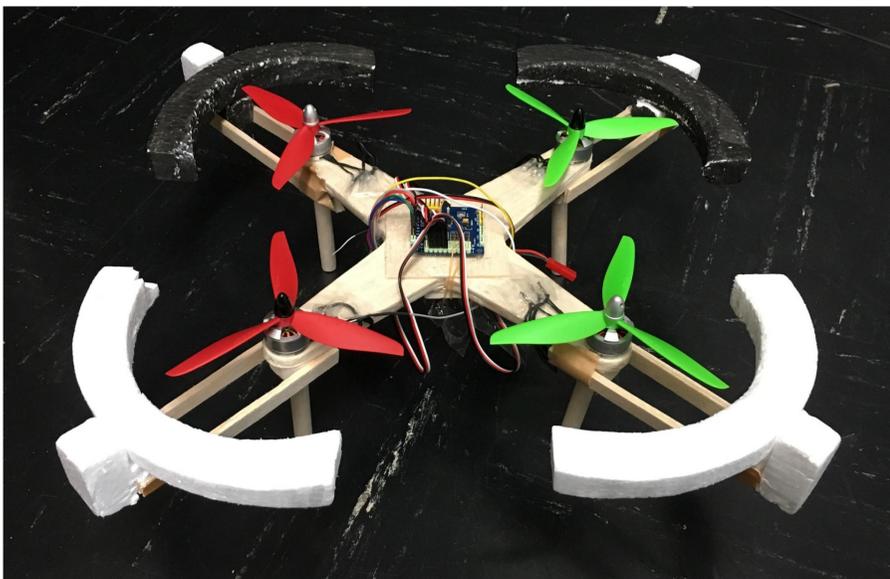
# Hawk eye

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## Concept

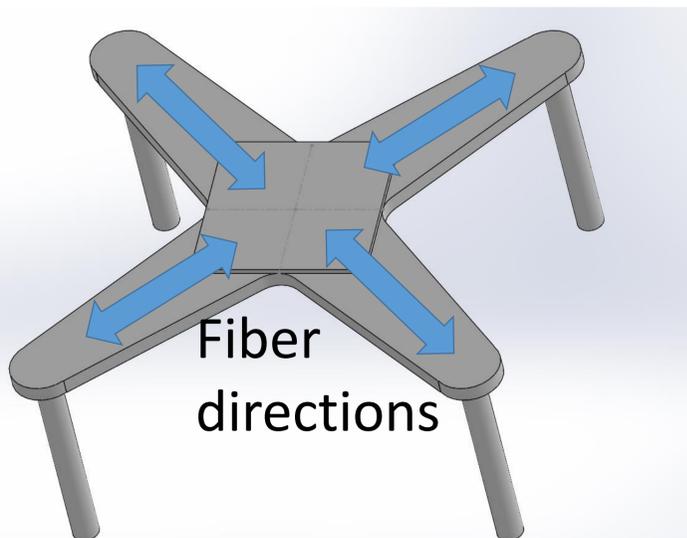
- Light balsa frame
  - equipment repletion
- High resolution camera
  - Certain air shoot

35 grams  
(with legs and prop guards)



## Design

- Square motor layout
  - Isotropic mobility
- Exchangeable leg



## Making

- 4 Arms
  - 2mm balsa sheet lamination
- Leg mount
  - Balsa block



## Safety

- Styrene foam prop guard
  - Prevent injury

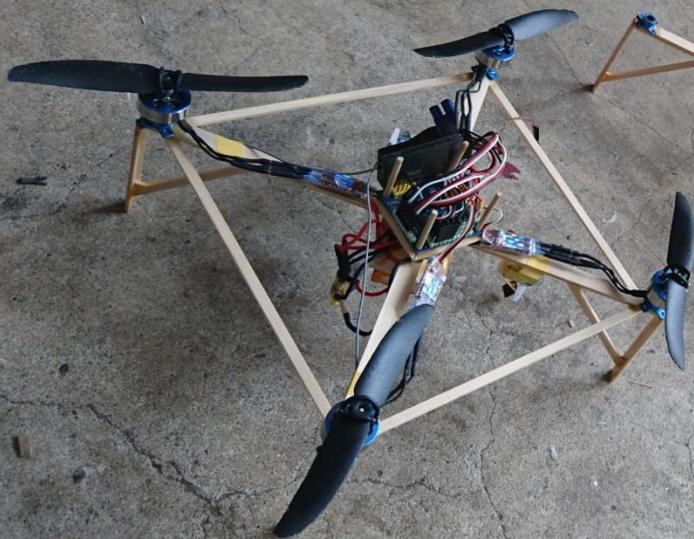
## Characteristics

- High-visibility color design
  - Safe flight
- 3-blade propellers
  - Enough thrust

## Specification

- Weight: 295g
- Arm length: 110mm
- Prop diameter: 5 inch

# Flying BABA



Member  
K.Baba  
R.Oyama  
D.Takayama  
T.Kanai

## Concept & Picture

Concept

Thin & light frame  
Simple



## Structure

Simple & Light Weight

Main structure consists of wood  
Frame Weight is 37g

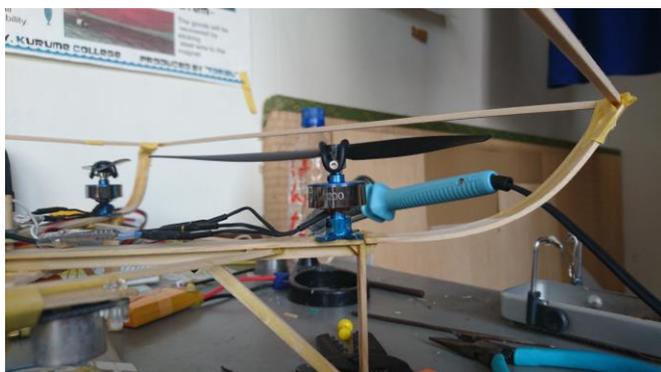
Method of fabrication

Applying an adhesive



## Safety

Propeller Guard protect propeller



## Specification

### Measurement

Width	490mm
Height	135mm
Weight	285g

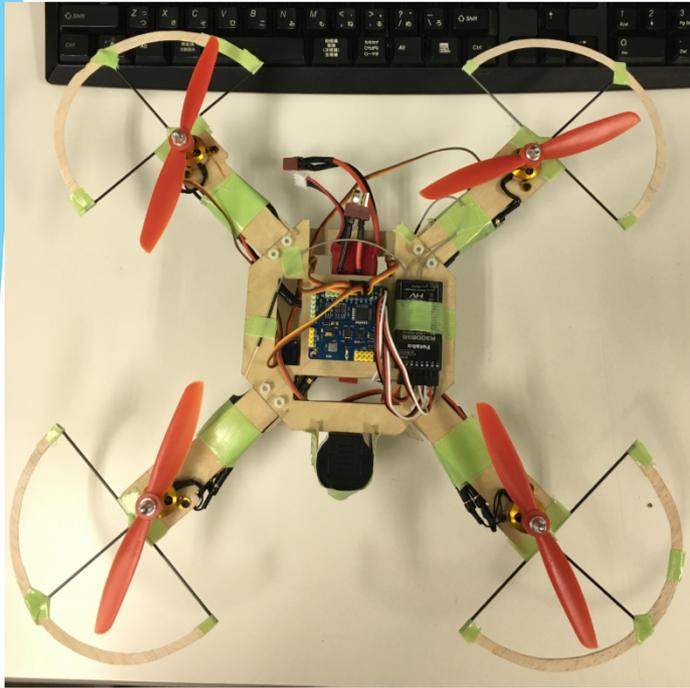
### Electrical equipment

Motor	2200KV
Propeller	5inch
Battery	Li-po 2S 1300mAh
Camera	Raspberry Pi A+

# mini

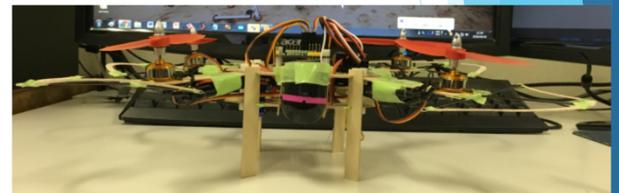
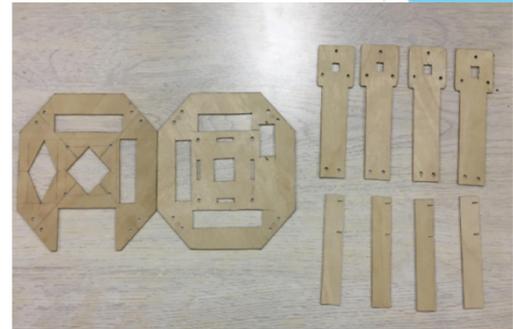
MEMBER:

AKIYUKI SHIMIZU / TADANOBU AIKAWA / TOMOFUMI KURAISHI  
ATSUSHI HISATAKE / TASUKU HAMAMOTO



## SPECIFICATION

length : 350 mm  
height : 120 mm  
weight : 294 g



## CONCEPT

- Using wood for easier processing.
- Made a void in order to reduce weight of the aircraft.
- To make it easier to reprint, it was produced for each component.

## PRODUCTION

Draw the line by using the templates, cut with a cutter.  
When drilling is used a pin-vise.

## DESIGN

An overall shape of the “mini” was sketched.  
We made a template to the drawings of each components.

## SAFETY

Propeller guard is made of a carbon rod and balsa wood.  
It will have been designed larger than the radius of the propeller.



# -Alcyone-

Main concept of our team's challenge is to adapt "bicopter" to the indoor missions.

Alcyone is bicopter, Produced by Tokyo University of Agriculture and Technology. Bicopter is one type of multi-copter that has only two rotors.

## -Size-

Two-rotor-multi-copter, "Alcyone" has only two propellers that rotated by two motors. Thus, the whole size of body could be reduced; "Alcyone" allows higher adaptation in narrow indoor environments and smaller packaging than ordinal quad-copters.



## -Safety-

Propeller guards of "Alcyone" cover hazardous area without interrupting tilts of main rotors. In order to relieve shocks of landing and crash landing, its feet are made of EPP.

Length	150mm
Width	500mm
Height	150mm
Weight	217g
Max Thrust	280g

## -Lightness-

Since "Alcyone" has two main motors, structures could be simplified and lightened than ordinal quad-copters. 3D-CAD designing enables optimizing its frame structure, and 3D-printed parts and carbon fiber reinforced parts made it light weight and strong enough.

