

## Representative Patent 03

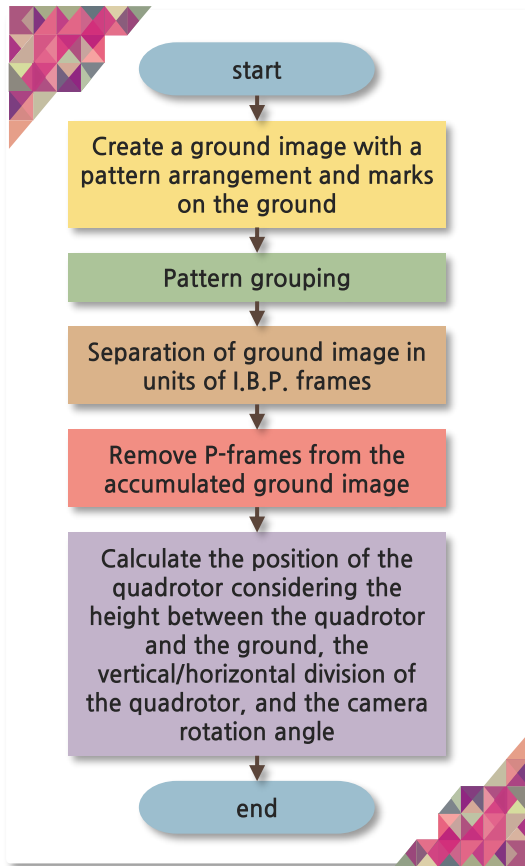
- ❖ Title of Invention : **Method and apparatus for localization of quad-rotor**
- ❖ Application Number. : KR2013-0148342

### Application of Technology and Field of Use

- ◆ **Quadrotor swarm control, Fire site monitoring**
- ◆ **Decrease in mark recognition when using only camera to determine location of quadrotor**
  - In the case that the quadrotor's camera recognizes the mark to determine the camera's location, the accuracy decreases sharply with distance.
- ◆ **Space constraint occurring when controlling quadrotor swarm through motion capture**
  - In the case that motion capture is used to control multiple quadrotors, it is possible to control only a narrow space due to the limitation of the application range.

### Features of Technology

- Generating a ground image including a pattern arrangement on the ground and marks using a camera attached to the bottom of a quadrotor
- Recognizing location of the quadrotor by processing the ground image and measuring the distance between the quadrotor and the ground



<Representative drawing>

# Forestry/Wildfire

## Representative Patent 03

### Technical Effects

#### ◆ Applicable to self-localization in quadrotor swarm flight

- It is possible to efficiently carry out swarm flight through location recognition of each quadrotor.

#### ◆ Possible to control quadrotor swarm in large space

- Because motion capture technology is not used, control of the quadrotor swarm is possible without space constraints.

#### ◆ Seamless mark recognition

- Since the processing task is less than the conventional method, recognition can be done when the mark recognition is executed inside the quadrotor.



<Drone demonstrating suppression of fire in high-rise building>

### Social, Environmental, Economical Effects

#### ◆ Effective fire suppression through accurate positioning of quadrotor

- In the event of a fire in a high-rise building or a large-scale forest fire that cannot be responded to with a fire ladder truck, effective fire suppression is possible by locating the quadrotor at the required point.

#### ◆ Possible to monitoring large areas of forests through swarm control of quadrotors

- Because it is possible to control the quadrotor swarm existing in a large space, it is possible to monitor a large area quickly.