2014 International Micro Air Vehicle Conference and Competition (IMAV 2014)
August 12-15, 2014 Delft, The Netherlands

Competition Results

1st prize
National University of Singapore (Singapore) [683]
Onboard automatic image stitching, onboard number recognition(*), onboard autonomous
laser-based room navigation, onboard computer vision based precision roof landing,
autonomous takeoffs, autonomous landings (*), onboard computer vision based 7-
segment digit recognition (*), autonomous flying WiFi-relay.

2nd prize
Team Dipole (Germany) [425]
Smallest MAV's of the competition. Very talented FPV flight with many take-off, precision
landings, reading house numbers, visiting 18 indoor rooms (several double and not
counted), recognizing 16 indoor objects correctly. Geocopter auto-take-off and flight,
precision auto landing and partial high resolution ortophoto.

3rd prize
Ecole Nationale de l'Aviation Civile (France) [189]
Autonomous takeoff, Best overall photomission, all blockades visible, full village high
resolution map at 6cm/pixel, autonomous computer vision based 7-segment display
reading (**), longest correct observation string, autonomous roof landing (*), reading
house numbers with many ARdrones in autonomous flight. Several autonomous landings.

4th place
High Flyers (Poland) [161]
Autonomous Photomission (*), Autonomous Flight Blockade detection, Autonomous take-
offs, precision landing, Video-based indoor ARDrone flight with several rooms and objects
but many crashes and many user interactions.

5th place
AUTMAV (Iran) [148]
Flying router-repeater quad (*), Auto-take-off, Partial photomap, 1 Blockade, Roof-
Landing (*). IP-Camera house number reading (*), ARdrone roof landing.

6th place
AKAMAV (Germany) [108]
Autonomous take-offs, Autonomous photomap (*), House number readings (*),
Autonomous roof landing, 1 Blockade, Several manual landings.

7th place
Manchester (UK) [100]
Autonomous take-off, Photomission flown, minimal village map (*), 1 blockade, precision
landing.
8th place

**EMC+ (Iran) [79]**
FPV flight: Take-Off, Roof landing (*), Precision Landing, House number reading (OCR software), Visited 2 indoor Rooms, Roof landing.

9th place

**MRL (Iran) [39]**
Automatic take-off, Roof landing (*), Photomission flown, map stitching error (*), automatic landing.

10th place

**ARIO (Iran) [20]**
Fixed-wing: Autonomous take-off, autonomous photomission, many manual flight interactions

11th place + Special Achievement Prize

**MAVerix (Germany) [12]**
Autonomous take-off, autonomous transitioning to forward flight as fixed-wing, onboard camera (*)/no mission information recorded. **Special Achievement** prize for their contribution to hybrid flight, their work on de-coupling controls.

Shared 12th place

**CUAF (UK) [0]**
Autonomous Take-Off (*), Photomission (*), ...

Shared 12th place

**MIPTeam (Russia) [0]**
New own design of autopilot: SmartAP. Video-based entering the house (*)

(*) Item attempted but either failed, or needed manual flight, or not according to competition rules.

(**) Item attempted in autonomous mission mode, but human intervention was needed and it got scored in autonomous flight mode.

**Competition**

The IMAV 2014 will have a single competition, which combines outdoor and indoor elements - and transitions between outdoor and indoor spaces. The competition will take place in "Oostdorp", a village constructed by the Ministry of Defense for exercise purposes. A selection round is organized for teams that want to join the competition. The Competition and Safety Rules can be found in the following documents:

- Competition Rules (V1.4)
- Safety Rules (V0.6)

**Practice day**

On August 11, the Monday before the IMAV, there will be a pratice day at the competition location in Oostdorp. This will allow the teams to prepare for the competition day on Wednesday. Upon registration, team leaders will have to indicate whether they want to attend the practice day.

**Additional Information**

**Task D**

The following link shows a video of the mechanical digit display that needs to be observed while performing Task D, mission element 9
The image below shows the house with the flat roof. To accomplish Task D, teams have to land their MAV on this roof. From this roof the mechanical digit display needs to be observed. The picture was taken at the position where the mechanical digit display will be placed.

**Task C**

The following images are made inside the house that needs to be inspected to accomplish task C. Note that the specific interior (chairs, tables, etc.) might be different during the actual disaster scenario.
Participation Rules and Deadlines

Teams that want to participate in the competition will have to submit a team video by **June 11, 2014 (extended deadline)**. In this video, teams have to present the following aspects:

- the team members and their role in the team
- the strategy for the competition
- a timeline with steps that will be taken during preparation for the competition
- a demonstration that shows how the team will fulfill the Safety Rules
- a (static) demonstration of the MAV’s (these can also be under development)
- a demonstration of at least one MAV that accomplishes a mission element (take-off or landing does not count)

Based on this video the IMAV 2014 organization will decide if the team is allowed to join the competition. The video should be no longer than 45 minutes. Teams can decide to make the video public, or to make it only available to the IMAV 2014 organizers. If the organizers require more information from a team, a Skype or Hangout meeting can be organized with the team leader after June 1.