

# Mafat (DDR&D) Challenge

## Detection and fine grained classification of objects in aerial imagery

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Background...

### **1 The Task**

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### **2 The Dataset**

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### **3 Challenges**

#### 1. Oriented Bounding Box

The dataset consisted of Oriented Bounding Boxes (Bounding Boxes which are not axis aligned).

All the known formats however supports axis aligned Bounding Boxes only, called Horizontal Bounding Boxes. Therefore, I had to wrap each OBB in HBB.

#### 2. Classes with a point instead of Bounding Box

The solar panel is marked with a point instead of 4 points Bounding Box. Therefore, I've decided to just create a 4 point Bounding Box for it containing the same point multiplied by 4.

#### 3. High resolution images

Some images did not fit into GPU (94). I decided to ignore them for now, and taking into account images with max resolution of 1000.

#### 4. Subclasses

I decided to ignore subclasses for now, since most of the detection networks modules do not support them.

5. Falsely annotated images

Some image annotations contained bounding boxes with coordinates outside of the image. I decided to crop these coordinates to fit inside image.

6. Small objects

The objects appeared in the images are much smaller than standard images networks handle. Therefore, the Region Proposal Network missed all the objects.

## 4 State Of The Art Computer Vision Networks

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