Syrian Arab Republic
Distinction and Creativity Agency
National Center for the Distinguished

Borders Surveillance using a Quadcopter based on Convolutional Neural Network Yolov3

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Introduction

- Border surveillance
- Aim of research

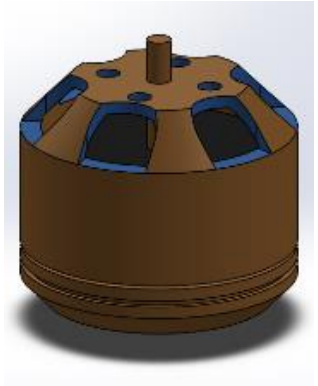
Why Quadcopter?

- Traditional observational surveillance
- Lives of pilots
- Burdens on human resources
- Operation in dangerous conditions

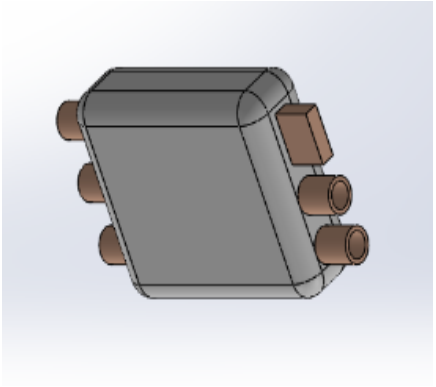
Why CNN?

- Accuracy
- Real time
- Cost and performance

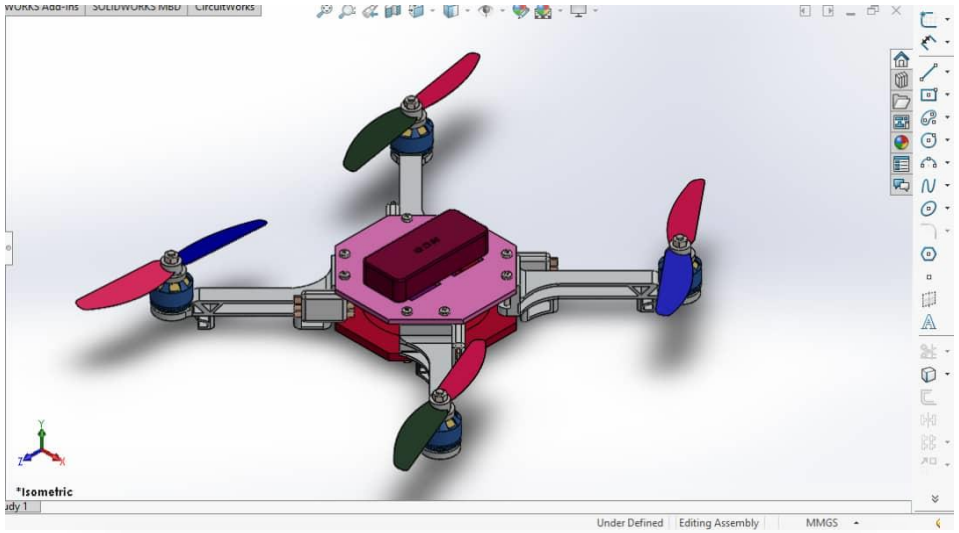
3D Model of the Quadcopter

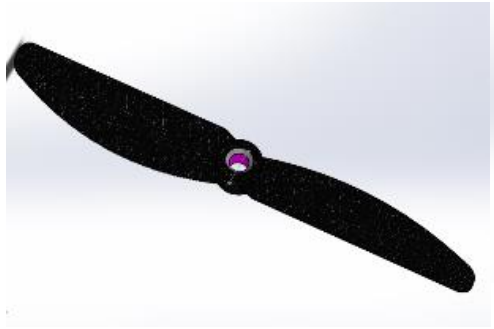


3D model of the motor in SOLIDWORKS

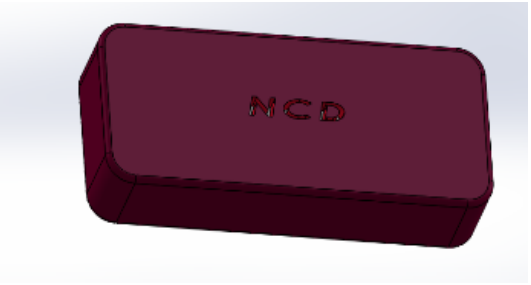


3D model of the ESC in SOLIDWORKS





3D model of the propeller in SOLIDWORKS

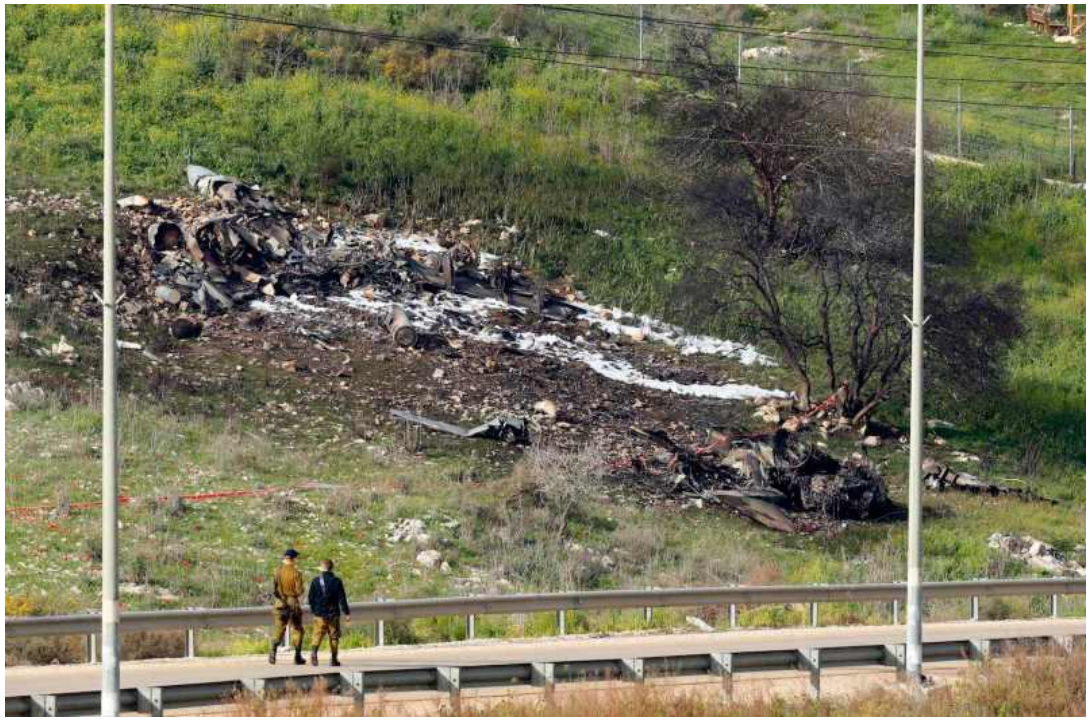


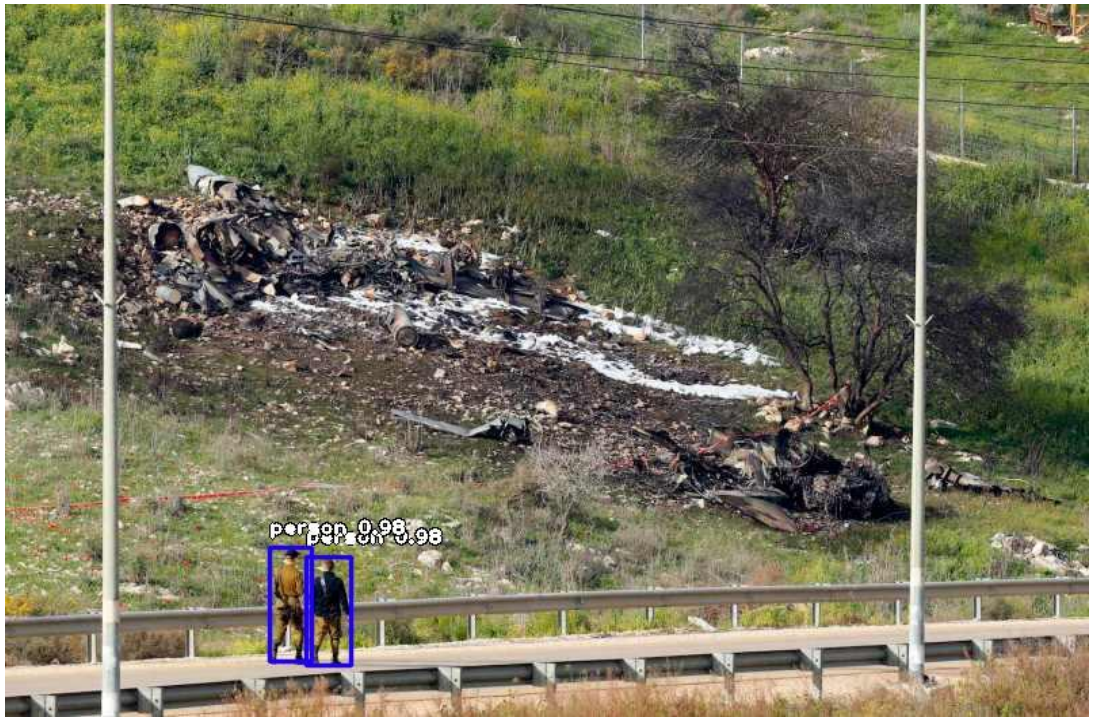
3D model of the battery in SOLIDWORKS

Convolutional Neural Network CNN

RESNET-50	YOLOv3	Tiny-YOLOv3
Accurate	Accurate	Not accurate
Too slow	Fast	Too fast

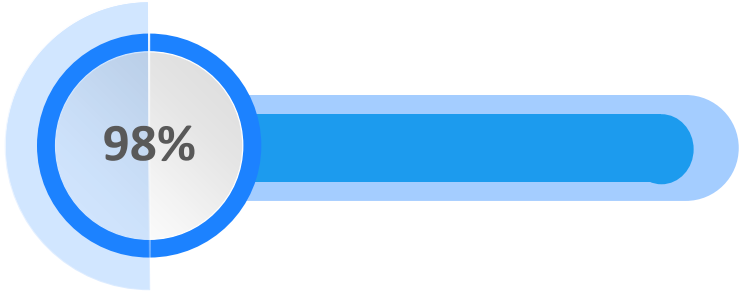
YOLOv3 on images





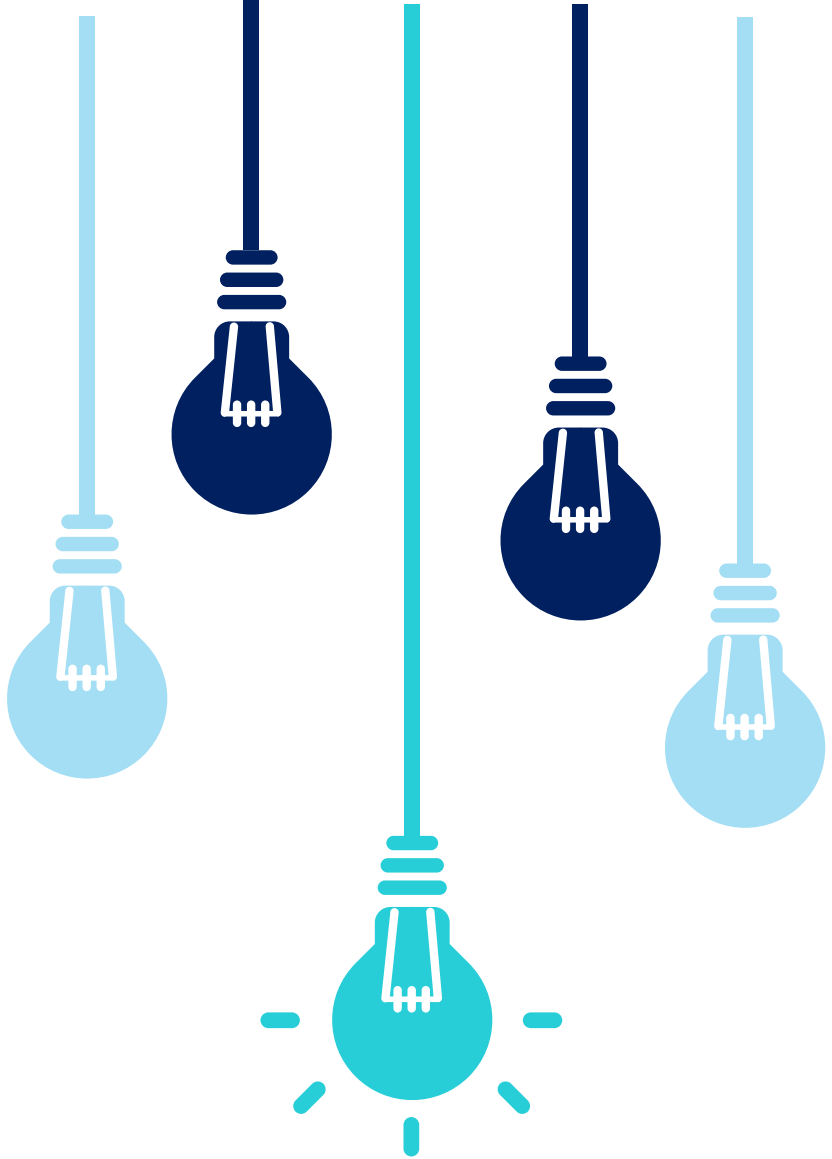
person1

person2



Codes

- A threat or not
- Object detection process
- Huge storage space



Results

Unlimited scanned area

+

Accuracy

→

High secure level

Conclusion and Future Work

References

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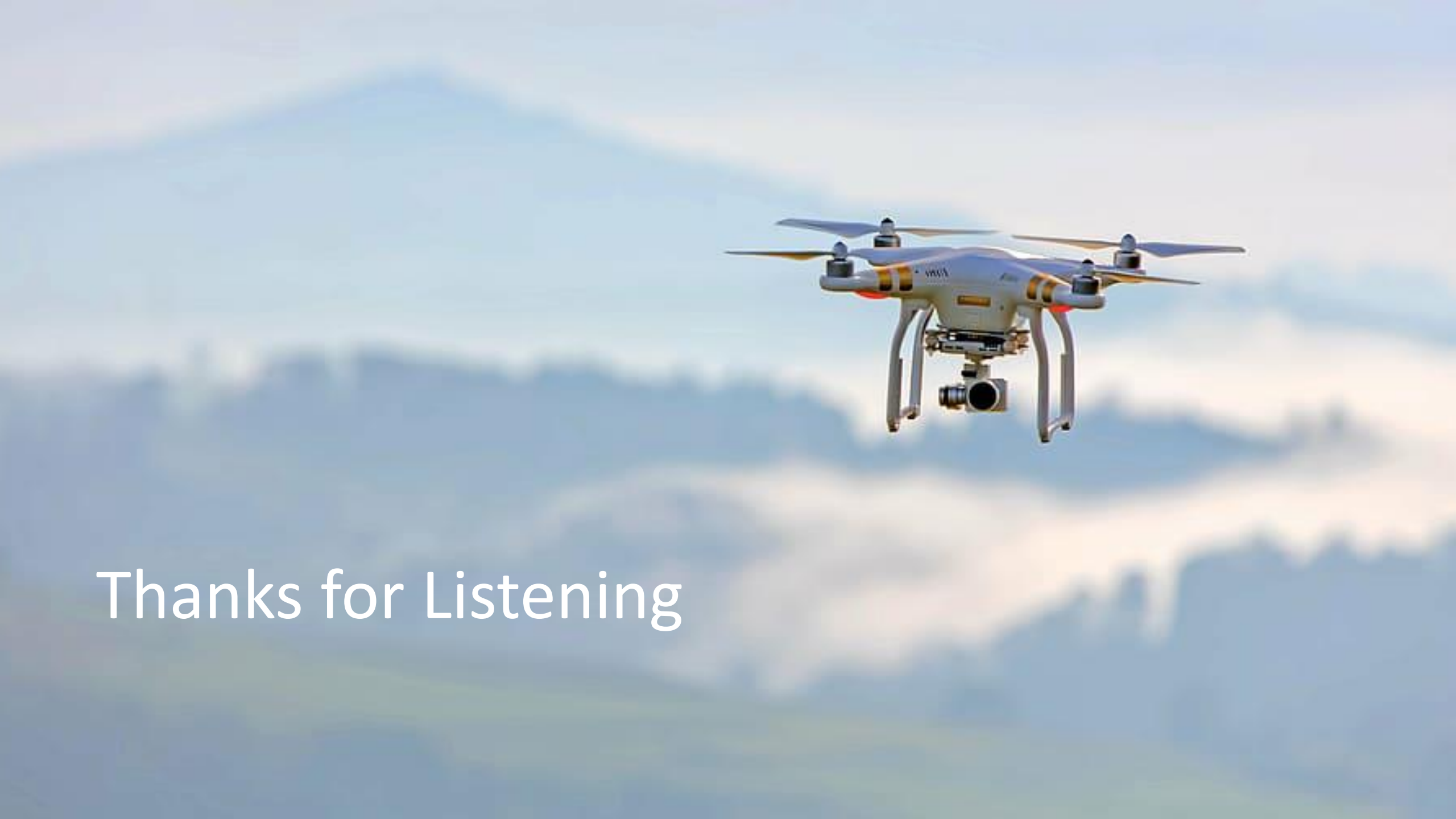

Thanks for Listening