Twitter Thread by AI Fast Track (48/50)

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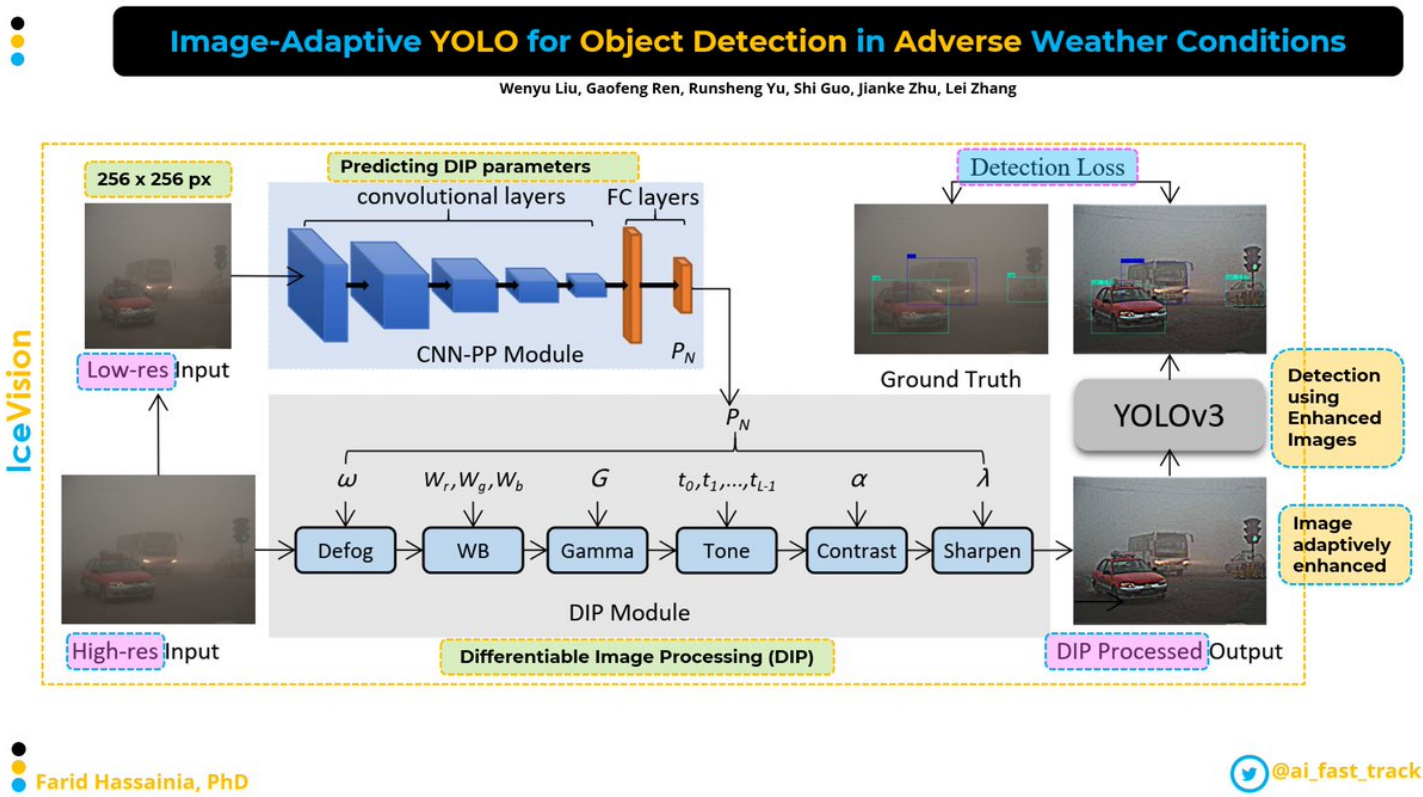
You intuitively know that poor quality images lead to poor object detection and vice-versa.

Image-Adaptive (IA)-YOLO improves object detection in adverse weather conditions using a hybrid task: image improvement combined with object detection.



• The paper, Image-Adaptive YOLO for Object Detection in Adverse Weather Conditions, was published 3 days ago:

• The authors present an end-to-end hybrid data training task

• Each input image is adaptively enhanced to obtain better detection performance

• The hybrid architecture has a CNN-Parameter Predictor (PP) network that learns some appropriate Differentiable Image Processing (DIP) parameters to adaptivily enhance images for object detection, in a weakly supervised manner

• The DIP module consists of six differentiable ■lters with adjustable hyperparameters: Defog, White Balance(WB), Gamma, Contrast, Tone, and Sharpen.

• The CNN-PP network is trained using low-resolution images (256x256px) to speed the training

• CNN-PP parameters are used by the DIP module to improve the quality of the high-resolution images

• DIP processed (enhanced) images feed a YOLOv3 model for the object detection task

• IA-YOLO improves the baseline YOLO I by 0.89, 13.48 and 3.95 percent on VOC_norm_test, VOC_Dark_test and ExDark_test, respectively

■ Paper: Image-Adaptive YOLO for Object Detection in Adverse Weather Conditions
• abs: https://t.co/ytKkcswB9b
• pdf: https://t.co/gPFexKL22Z
• Repo: https://t.co/sVF4Xz6ddz