F/A-18 TRACKING CORROSION ASSESSMENT TOOL



Objective

- Use Mixed Reality to assist in current aircraft maintenance routines (IETMs)
- Create algorithms to detect F/A-18 corrosion issues in images through Computer Vision/Machine Learning
- Replicates an existing inspection IETM and performs automated corrosion detection via integrated Hololens application



MR Application Goals

- Duplicate the existing IETM steps
- Conform the digital space to the actual aircraft in front of the user
- Assist the user to navigate around the aircraft to locations specified in the IETM
- Exhibits holographic visual aids to guide the user to proper action
- Produces additional documentation/information (.pdf, image, video, animation)
- Permits interactive querying of the model for part identification



STEP 04/45

CV/ML Goals

- Collaborate with FRCs to identify the required features on F/A-18s to detect
- Capture example images of F/A-18s
- Highlight the target features/classes through image labeling
- Create CV/ML algorithms which detect the features in images
- Use images to detect corrosion through the Hololens



fastener-2 0.72

fastener-2 0.63

fastener-2 0.75

fastener-2 0.65

fastener-2 0.7

Integrated Application Goals

- Utilize Hololens application which assist a user through corrosion inspection IETM
- Efficient use of time by providing IETM steps and provide a hands free user experience
- Ability to take images during the inspection (with and without user interaction)
- Use CV/ML Algorithms to detect corrosion/other features
- Displays the detected corrosion/features onto the 3D model
- Report generation with a summary of inspection and detected issues

