THE HONG KONG POLYTECHNIC UNIVERSITY
香港理工大學

BOEING

# ASRC

AVIATION SERVICES RESEARCH CENTRE

Presented By: Nicolas Detalle
Event: Predictive Aircraft Maintenance Conference
Date: 16 SEPT 2025

# WHO WE ARE

THE HONG KONG POLYTECHNIC UNIVERSITY
香港理工大學

*Top 100 Global University*

THE WORLD UNIVERSITY RANKINGS

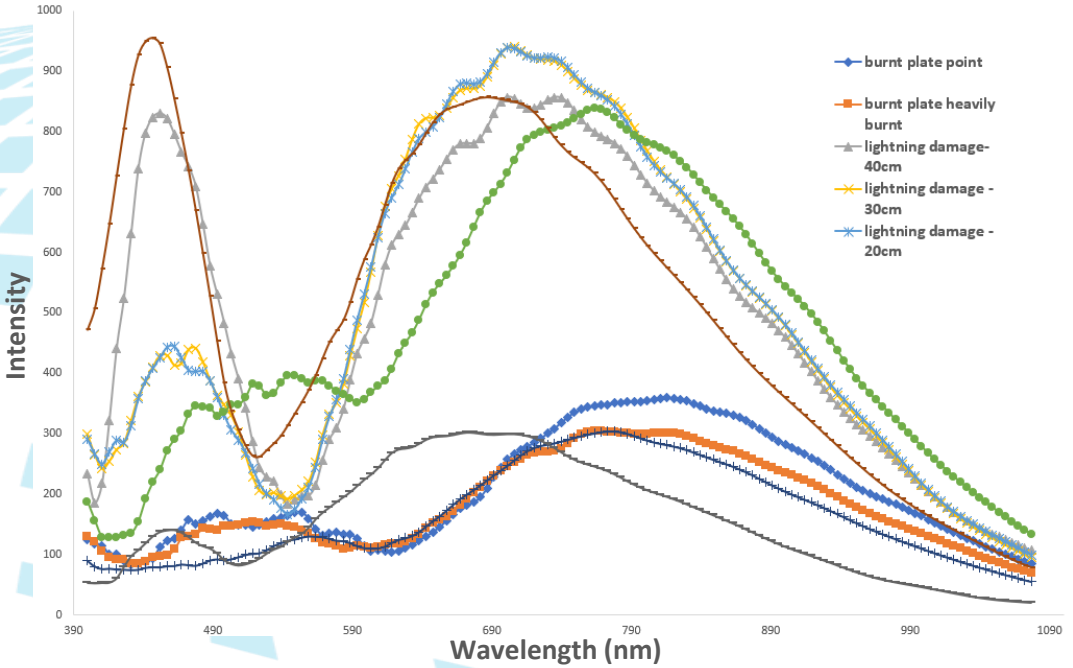
QS WORLD UNIVERSITY RANKINGS

BOEING

*Official collaborative research centre*

# VISUAL HYPERSPECTRAL DRONE INSPECTION

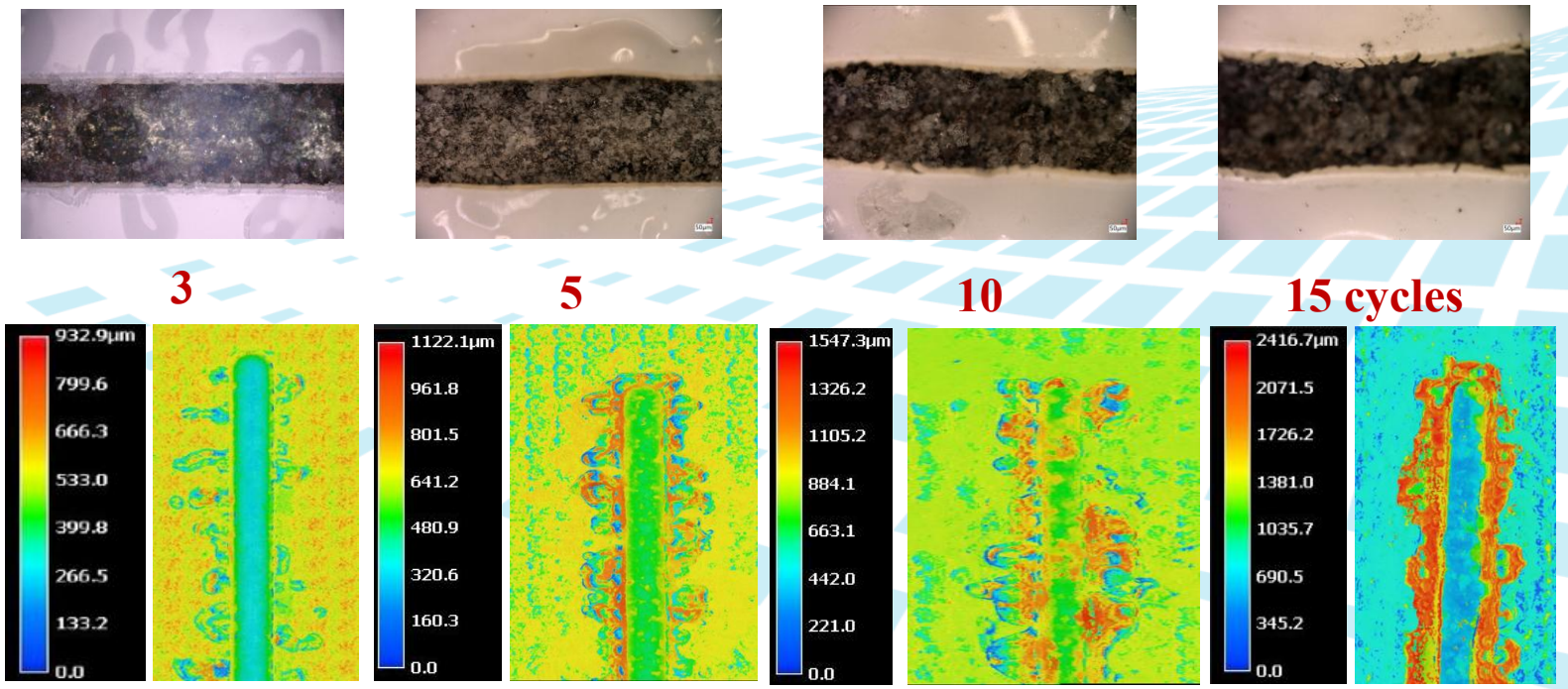
- Drones fitted with hyperspectral imaging for surface defects
- Inspection result integrated into a digital twin environment, allowing predictive analytics

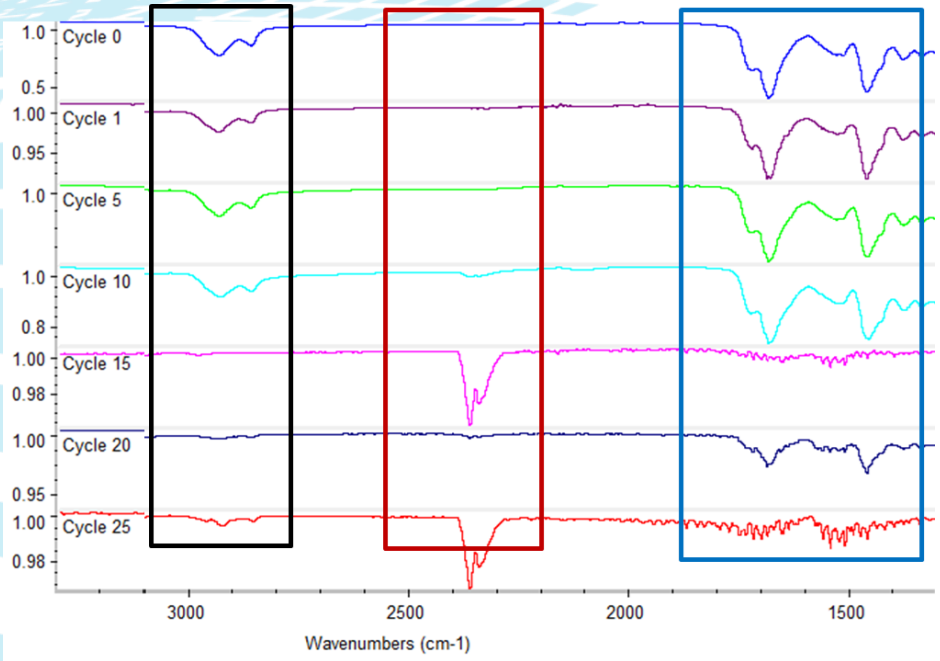



- Business Case: Line maintenance, real-time condition monitoring, reduction of inspection time by 80%

# COATING DEGRADATION MONITORING

- Enables early detection of coating wear and degradation.
- Data fed directly into digital twin.

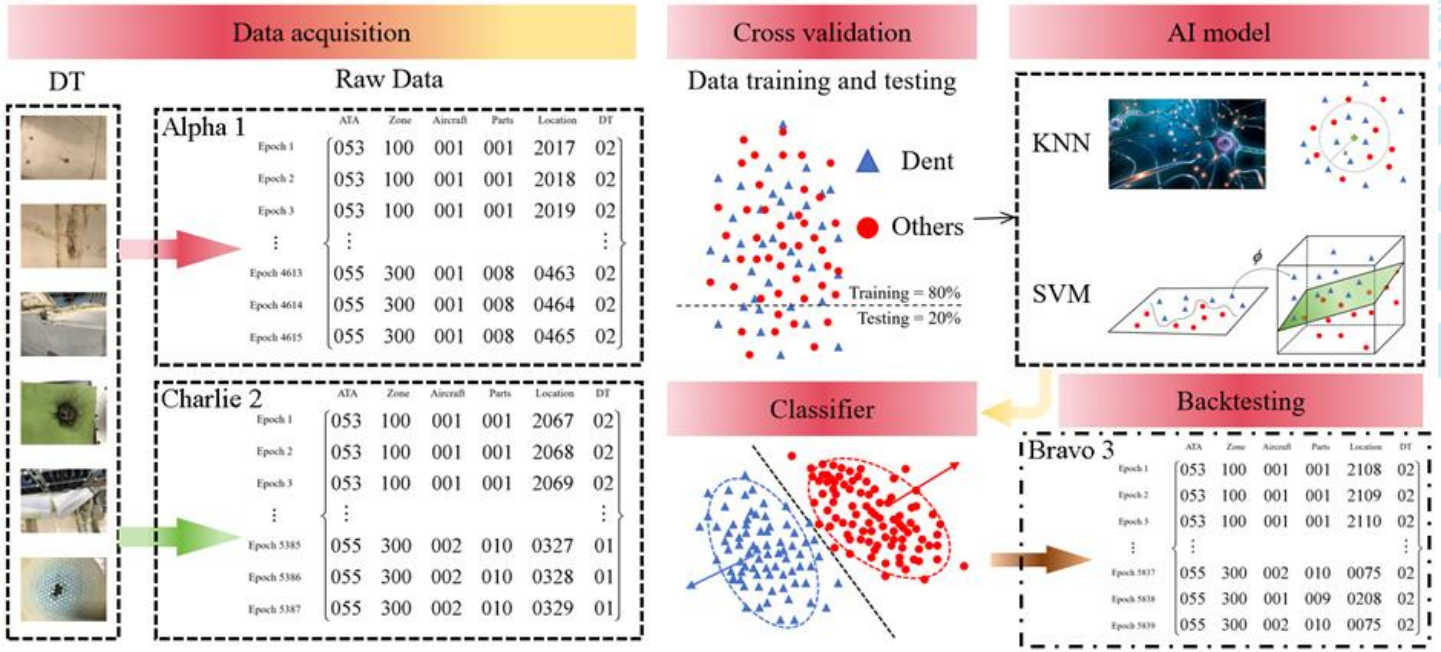


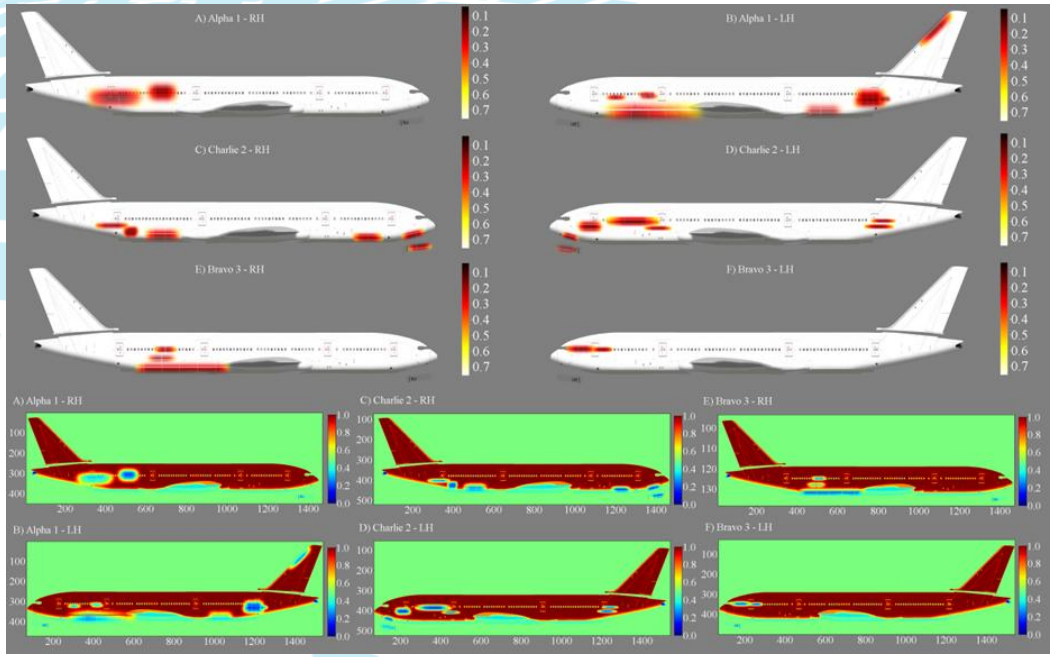




- Business Case: Supports lifecycle tracking and enhances maintenance planning.

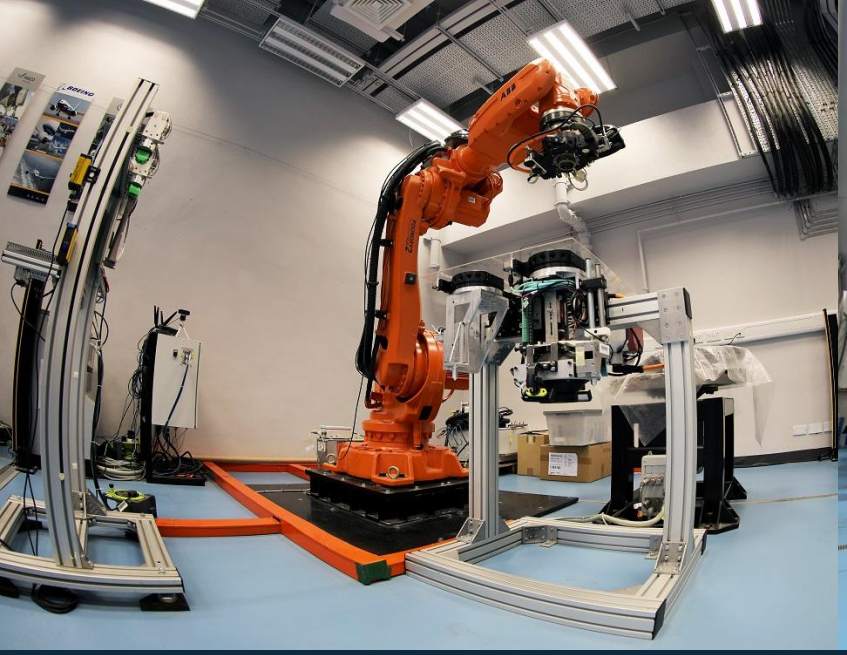
# AI-DRIVEN PREDICTIVE MAINTENANCE

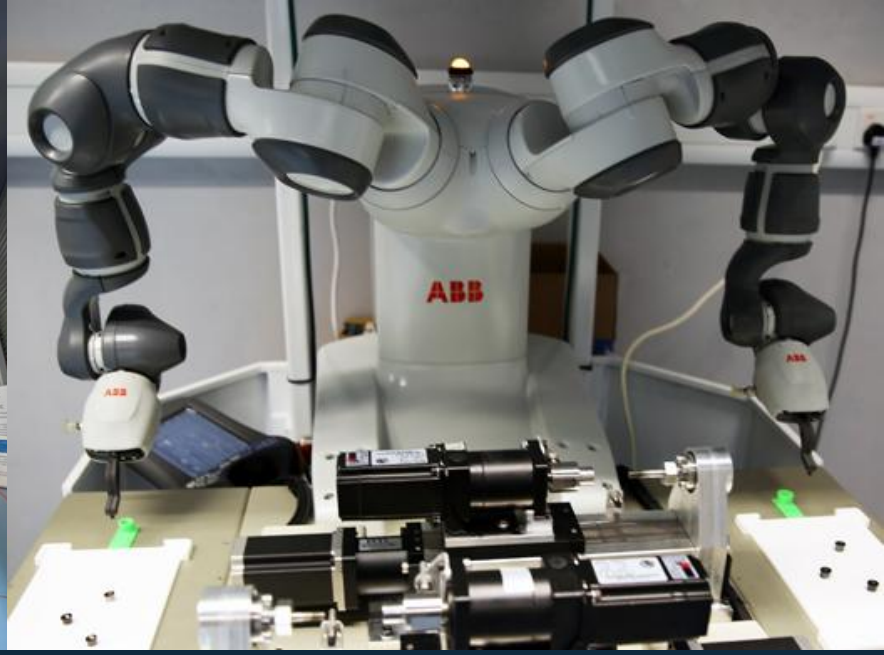
- Machine Learning Models interpret accumulated inspection and degradation data.
- LSTM (Long Short-Term Memory) gating mechanism based on the time series paradigm to trace defects, aiming to make proactive preventive judgments.




- Business Case: Forecast maintenance needs, reduce downtime, and optimize resource allocation.






Thank you

WEBSITE

LINKEDIN

INSTAGRAM

YOUTUBE