VEC VIRTUAL ENGINEERING CENTRE / AIRBUS

Hartree Centre Science & Technology Facilities Council

IBM

Developing visualisation and AI tools for engineering production

Researchers based at the STFC Hartree® Centre and the Virtual Engineering Centre, University of Liverpool, are working with Airbus in the UK to apply state-of-the-art artificial intelligence (AI) and data visualisation to their production process.

THE CHALLENGE

During quality control of the aircraft manufacturing processes, Airbus generates large amounts of complex data detailing aircraft build characteristics together with the costs incurred and actions taken to ensure quality standards are met.

To improve production efficiency by anticipating disruptions and accelerating problem-solving, Airbus was looking to combine AI and data visualisation to offer more insight into their complex quality control processes.

THE SOLUTION

The STFC Hartree Centre first developed a data merging and aggregation pipeline to produce a consolidated dataset for AI and visualisation. In collaboration with the Virtual Engineering Centre, and went on to create interactive dashboards and 3D data visualisations, enabling individual build characteristics and associated costs to be viewed in the context of similar products.

This allowed cost variation to be interrogated over time. The team are now looking to apply machine learning techniques to understand the influence of aircraft customisation and modification on the cost of the build process.

THE BENEFITS

Undertaken as part of the Innovation Return on Research (IROR) programme, a collaboration between STFC and IBM Research – this work is generating insights into the collection, organisation and processing of production data required for the application of AI methods.

The data analytics from the project will quantify the opportunities for efficiency improvements in the production process, enabling Airbus to target improvements more effectively.

With the analytics tools and visualisations generated, Airbus will be able to interrogate their production data more efficiently, resulting in better data-driven decision-making, encompassing all available information.

"The collaborative work undertaken is enabling us to explore how innovative use of AI and data visualisation can generate insights from our production data in an accessible way.

This could help to drive efficiency improvements in our production and quality control processes."

- James Perry - Airbus

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