connected everything.

A Flexible & Low-Cost AR/AI Solution for Critical to Quality Feature & Defect Identification for SMEs

Project Team:

University of Wales Trinity Saint David

Industrial Partners

Arnaud Marotin
(Numerical Methods)

Richard Morgan
(Lean / Six Sigma)

Graham Howe
(Industry 4.0)

Jordan Jenkins
(Machine Vision)

MME
MM Engineering

hi mark
hi-mark Automotive

The project team and timeframe

The feasibility study team comprises four investigators from the University of Wales Trinity Saint David. Working closely with industrial partners at MM Engineering, a flood and blast defence manufacturer based in Swansea, South Wales, and hi-mark Automotive, a Wrexham-based manufacturer of injection moulded components. The project will begin in June 2021 and will be completed in June 2022.

What does the project demonstrate?

In the context of Industry 4.0, Augmented Reality and Artificial Intelligence have been identified as key enabling technologies in the transition towards the digitalisation of manufacturing. Whilst there has been a steady growth in the adoption of such technologies in large-scale manufacturing enterprises in recent years, small and medium-sized enterprises are quickly becoming the laggards of these technologies.

A recent scoping study conducted by UWTSD identified that whilst Welsh manufacturing companies certainly understand that the imperatives of I4.0 cannot be ignored, and whilst there is a clear desire, on the part of Welsh companies, to begin (or extend) their engagement with I4.0 technologies. The same companies are struggling to understand both the full potential and the challenges of embracing I4.0.

This study will explore the feasibility of a low-cost markerless augmented reality system, that leverages recent advancements in machine and deep learning-based computer vision, to assist production operatives in identifying manufacturing defects and design features considered critical to quality. The study aims to improve the fitness for purpose of quality control and assurance activities at the partner companies, and further, challenge the barriers to entry faced by SMEs as a collective when adopting these advanced manufacturing technologies.