

2) Robo-OptimAI - Robot Optimization Platform in Real-Time; Infinite Foundry Lda, Portugal

EXPERIMENT DESCRIPTION

Infinite Foundry developed a cloud platform enabling engineering to raise on-demand computational capacity to execute 3D design and virtual product simulation and testing, through web browsers. Our innovation is a cloud service that virtualizes the access to the main commercial CAD, CAM, CAE and simulation software through the browser on a pay per hour pricing, which allows physics-based modelling technology to be used before, during, and after production of a physical product e.g. a vehicle for complete lifecycle analysis.



The way it works is by storing IoT (internet of sensors) data measured in service in a hybrid configuration: Artificial Intelligence (AI) in the edge computing + physics in the cloud computing. This way we can apply our platform to run a physics-based model of the industrial robots in a body shop, simulated in our unique hybrid approach of AI + physics.

TECHNICAL IMPACT

Tecnomatix Plant Simulation software provides discrete event simulation and statistical analysis capabilities to optimize material handling, logistics, machine utilization, and labor requirements. For the first time in this experiment, we bring Tecnomatix Plant Simulation technology from its traditional role as a desktop prediction tool, to be used during operation in a cloud environment to quickly answer to asymmetric changes in market needs, that have impact in production.

To achieve that MIDIH components in edge computing extract the movement data from robots using OPC UA protocol and send it to an IoT data repository, where the instance with Tecnomatix Plant Simulation can collect the robot movement data it needs.

ECONOMICAL/BUSINESS IMPACT

Although plant and process simulation technology are known for a longtime to allow industry to optimize its production and resources, it has not been widely implemented due to the hardware and software costs involved. This is due to the fact an industry does not need to optimize every day its production tasks, so the ROI of plant and process simulation technology is questionable. This experiment was very innovative as it showed the potential of using the power of cloud and its pay as you go nature to allow industries to optimize their production process without needing an on-premises engineering infrastructure.

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