# Video Analytics for Manual Assembly

THE CHALLENGE

Operators on the assembly line make repetitive as well as one-off errors. Sometimes these mistakes are caused by inadequacies in the process design itself. These mistakes must be resolved on rework stations or cause scrap, and cost money.

OUR SOLUTION

Our Pathfinder™ platform automatically builds computational models of a complex physical task, such as an assembly activity, given only a handful of recorded demonstrations of the task. Once such a model is built, Pathfinder™ can finely track the job status from live video, to guide a worker through the task helping them avoid assembly mistakes while providing powerful analytics to engineers, and production tracking capabilities to managers. Pathfinder™ analytics identifies non-value added activities across processes, unexpected variability in process times, and traces assembly mistakes through a line; whereas its digital work instruction capability offers audible and visual alerts to help the operator avoid assembly mistakes. We improve first-time yields by **10%**, reduce manual assembly related quality issues by **60%,** and reduce operator training times by **44%**.
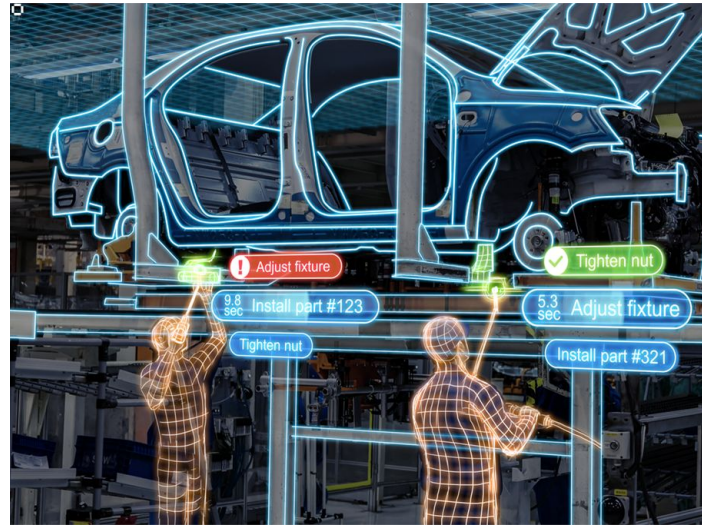
SET UP

We empower manufacturing staff without any technical training to set up the solution. An ordinary webcam can be installed within a few minutes using a convenient mount that we provide. We suggest that the camera be clamped at a height of 3-5 feet above the workbench, looking downwards. It does not need to look at the entire body of the worker, simply hands and the parts being used. Our camera placement is flexible, and works as long as there is a clear line of sight to the activity, while keeping the camera stable.

We make onboarding of a new process extremely simple. We will either set up the process ourselves or assist an associate or engineer from the customer's side to set it up.

Step 1: Capture
Enter a bill of process and record a handful of demonstrations of the process split across multiple workers to capture various working styles.

Step 2: Label
Label the video of just one cycle at the level of individual steps (takes ~10 minutes).

Step 3: Deploy
Provide live feedback to assembly operator or passively analyze video for improvements.

Step 4: Analyze
Get cycle times and step-level analytics, such as standard deviation for each step.

Value Proposition

- Train and deploy a highly accurate model in a week
- Real-time operator guidance to minimize manual assembly errors
- Deep Analytics to drive insight for industrial engineering groups

Retrocausal

Deploy cameras: We help you install a camera connected to a Windows computer on your lines with in minutes without causing any disruptions.

Set up digital work instructions and dashboards: You set up a new task by defining the standard operating procedure steps, recording a few shifts of the process, and labeling just one cycle of the process. This takes about 20 minutes of your time on the workstation.

Control in-process quality and get time studies: Your operators get real-time alerts when they make mistakes and your engineers are able to use step-level analytics and traceability tools that are part of the Pathfinder™ platform to improve your line.

Measure Impact: You are able to measure and confirm the impact in terms of scrap costs, re-work costs, cycle times, non-value add work, and time spent on root cause analysis that all go down..

Continuous Improvement: You expand Pathfinder™ to further workstations and processes, potentially using your own staff. Pathfinder™ can be set up by someone without a technical background. We continue to provide you with support with 24/7 support line, and regular visits for training and maintenance.

Learn more at retrocausal.ai