Mindtree
Welcome to possible

Assured quality at low cost through Instrument Cluster testing for a global automotive major.

The dynamics of the automobile industry demand that participants continuously develop new products and improve the quality of existing products while keeping a check on costs. As a result, complex testing systems have evolved to ensure consistently high quality at low cost.

Here is how Mindtree helped a worldwide automotive component leader leverage machine vision to cost-effectively improve the testing of its Instrument Clusters.

The challenge

The customer has a range of automotive-related products, including Instrument Clusters. The testing of its clusters was done manually, where a tester would validate the response read from each cluster. This process led to a number of issues:

- High cost and effort required for testing, as each cluster supports 32 languages Significant time was also spent on regression testing
- Unsatisfactory quality due to human error caused by fatigue from repetitive testing procedures
- Insufficient testing scope due to limitations in human perception, such as the inability to detect simultaneous responses at multiple places
- Lack of scalability and future readiness, as upcoming clusters would display greater and more complex information than at present

Our solution

Mindtree collaborated with the customer to replace human visual input by machine vision. Our goal was to use advanced image processing techniques to produce test results based on pass/fail criteria.

The solution was implemented in two phases. In phase one we developed a Proof of Concept (PoC) and created a set of tools and libraries to interpret the information derived from images. Then in phase two we integrated machine vision with the existing testing system.

Business impact

- Reduced effort by approximately 90%
- Enhanced testing scope to address additional performance issues which were not measurable earlier
- Improved accuracy by eliminating human error
- Increased capacity of the test system; which can now be used around the clock
- Enabled global standardization by sharing test libraries

The team first analyzed instrument panels and then divided them into zones. Different Image processing techniques were then deployed for each zone, including pattern matching, Optical Character Recognition (OCR) and color recognition.

We exceeded the customer's expectations by not only meeting their stated needs but also equipping them with additional capabilities. These included developing a utility to measure delays between display indicators, creating universally applicable libraries for use across geographies, and applying optimization techniques. The strength of the project has been recognized by the customer by showcasing it at their worldwide Innovation Day.

About Mindtree

Mindtree is a global information technology solutions company with revenues of over USD 400 million. Our team of 11,500+ experts engineer meaningful technology solutions to help businesses and societies flourish. We enable our customers achieve competitive advantage through flexible and global delivery models, agile methodologies and expert frameworks.