

## New Dynamic Algorithms Allow Machine Vision Systems to Reach Their Full Potential

Machine vision systems have become more and more prevalent over the years, and are now used in applications ranging from inspecting product packaging to checking complex electronic and mechanical assemblies. Manufacturers, with their constant strive to increase quality control and attain “zero defects” goals, are helping to fuel the demand for these systems in all areas of the production process. Technology has contributed too – with faster and more powerful PC platforms, robust 32-bit operating systems, and easy-to-use integrated MV software applications – making Machine vision systems more powerful, easier to program, and less expensive to use than ever before.

But one problem still remains. Algorithms – the mathematics used for processing image data to perform operations and decisions – have not kept up with the great strides made in the other areas of machine vision. These algorithms, some dating back over 20 years, have severely limited the performance potential of these fast, easy to program systems. Due to their laboratory heritage, these “static” algorithms can only operate in environments where “controls” can be strictly ensured and maintained. For machine vision applications, these controls include strategically placed lighting, precise part position and placement, strict limitations on allowable part color shifts and/or texture changes, very limited part rotation, and minimal part scale (size) changes. In a manufacturing environment, these variables occur naturally and are often difficult - if not impossible - to control and laborious to maintain. Unfortunately, if these controls are not strictly enforced, the algorithms cannot operate properly and fail. The result: the machine vision system cannot perform properly and fails at its task of visual inspection.

But there is a solution. New advanced algorithm technologies for **dynamic** machine vision applications have emerged that can perform inspection applications without the need for strict environment controls. Based on entirely new techniques and methods, these algorithms are designed to operate in environments that dynamically change. Machine vision systems using these new algorithms are no longer hindered by changes in part orientation, rotation, scaling, lighting, image quality, etc. Finally, machine vision systems can reach their full performance potential.

DT Vision Foundry is the first flexible and easy-to-use machine vision package to utilize these new unique technologies. Designed for use in real-world manufacturing environments, the dynamic algorithms incorporated in DT Vision Foundry excel in situations where parameters change. One example, the dynamic Search Tool, is especially well suited for use in applications where lighting variations, such as poor contrast, glare, reflection, and inversion, are problematic. This as well as many other forthcoming dynamic tools will continue to make DT Vision Foundry an extremely versatile package – combining ease-of-use and programming flexibility with state of the art algorithm technologies. The end result: a cost-effective software solution – lowering overall costs by reducing programming time, removing strict environment controls, and making machine vision systems more robust in the manufacturing environment.