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Paper Abstract

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Paper Title: **Cooperative computer vision for flexible advanced robot controllers.**

Current available robotic systems provide limited support for CAD-based model-driven visualization, sensing algorithm development and integration, and automated graphical planning systems. This paper describes ongoing work which provides the functionality necessary to apply advanced robotics to automated manufacturing and assembly operations. The resulting tool will enable sensing and planning from computationally simple graphical objects. A synergistic interplay between human and operator vision is thus created from a programmable feedback received from the controller.

A set of tools for single and multiple focal plane sensor image processing and understanding has been demonstrated which utilizes object recognition models. The tool set provides a formalized environment for implementing image algebra-based preprocessors and model-based object recognizes, which will index a geometric CAD data base. This approach can be used as the basis for implementing sophisticated automated robotics in manufacturing, assembly, repair and inspection tasks in both ground and space applications