

**1997 International Conference on Robotics & Automation  
April 20-25, 1997, Albuquerque, NM**

**Video Proceedings**

## **Advances in Agile Manufacturing**

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### **Abstract**

An agile workcell has been developed for light mechanical assembly in collaboration with industrial sponsors. The workcell includes multiple Adept robots, a Bosch conveyor system, multiple flexible parts feeders at each robot's workstation, CCD cameras for parts feeding and hardware registration, and a dual VMEbus control system. Our flexible parts feeder design uses multiple conveyors to singulate the parts and machine vision to locate them. Specialized hardware is encapsulated on modular grippers and modular worktables which can be quickly interchanged for assembly of different products. Object-oriented software (C++) running in the real-time operating system, VxWorks, is used for workcell control. An agile software architecture was developed for rapid introduction of new assemblies through code re-use. A simulation of the workcell was developed so that controller software could be written and tested off-line, enabling the rapid introduction of new products.

# Advances Agile Manufacturing

**Yi-Tong Ma**



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