Mechatronics Laboratory

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Our Activities

1. Fiber Optic Sensor: A fiber optics based sensor developed in the lab has been integrated with the intelligent conveyor system for additional applications. It is ready for industrial use.

2. Upgraded RIDIM: Recursive Inverse Dynamics of Industrial Manipulators (RIDIM) software in C++/VC++ now has inverse kinematics abilities. This is made available to new users (www.angelfire.com/sc/saha).

3. Micro Air Vehicle: ARDB project to fabricate a mechanism that mimics the flight procedure of insects. A three axis coordinated motion has been modified to a single axis operation by the use of linkages. The system is instrumented using strain gauges and interfaced to a computer to measure the lift.

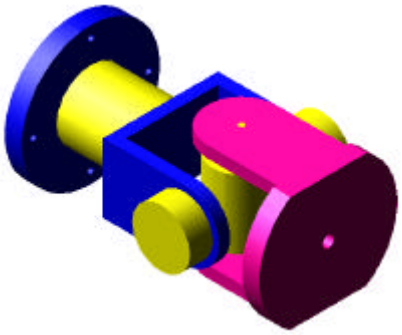
4. PPR from Systemantics: Indian-made Pick and Place Robot (PPR) from Systemantics India (P) Ltd, Bangalore has 4 degree of freedom. Control algorithms are developed as B. Tech/M. Tech projects which were verified using the PPR.

5. RTX Robot Libraries in C++: Earlier, programs were developed in PASCAL to write characters like 'IIT'. Recently, C++ libraries are developed in-house by directly accessing the robot microcontrollers. This allowed the motion control using C++ also.

ER9 PPR

6. SCORBOT ER9 Robot: This five degree-of-freedom robot can be simulated offline using ROBOCELL. The program can be downloaded to the robot controller for real motion.

7. Virtual Robotic Laboratory (VRL): An additional robot configuration, PPR is added in the existing ADAMS software based VRL. It allows virtual experimentation.



VRL Robotic Wrist

8. OWI Robot Control Driver Card: Relay based electronics driver cards are made in the lab to control OWI toy robots using computer.

9. Tri-axial Acceleration Measurement: The setup is used to measure the tri-axial acceleration of the helmet, which is dropped from predetermined height and signal is captured using a Picoscope.

and many more…

10. Intelligent Conveyor System: Sorting o f items can be performed by this conveyor system comprising of a belt conveyor, sensors, a pneumatic pusher, and PLC.

11. CNC XY Positioning System: This AC servo-motor controlled positioning system is to simulate a CNC milling/grinding table.

12. MA3000 Robot: This 5-DOF robot used to teach basic and advanced concepts of robotics.

13. HaPRA: Indigenously designed and developed in B. Tech projects for pick-n-place operations.

14. Parallel Drive Robot: Dexterous 2-axis robot is developed for research purposes.

15. Hexapod: A prototype of the next generation machine tool.

16. Hexa-slide: Prototype of a six-constant-legged parallel manipulator for machine tool applications.

17. Mobile Robot: A bought-out system is used for path planning study.

18. Walking Robot: A ready-made toy robot able to walk and play soccer. A larger size is also developed.

19. 8085 Kits: Several 8085 microprocessor kits for stepper motor control and elevator simulator, etc.

20. ULTRAGRIP: A robot kinematic simulation software is used to simulate PPR robot.

21. Phantom: A hardware system that interfaces with software to have realistic feel like push/pull.

22. Internet Controlled OWI: Programs are developed to control toy robot through internet.

Lab Museum….

23. Automatic Guided Vehicle; 24. 4-Legged Walking machine and 25. 3- Axis manipulator.

For further information, please contact

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