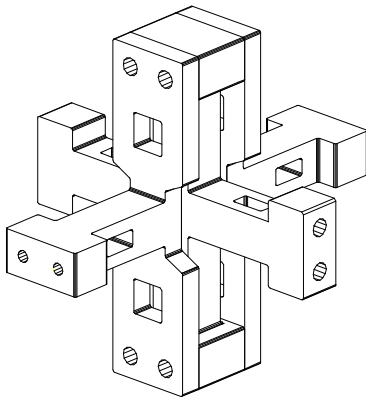


Robotic Assembly based on Force Feedback Signal

Investigator: Aj.Thammarat Kittipongpattana

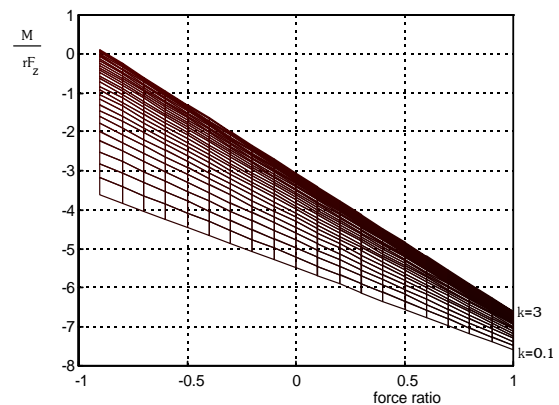
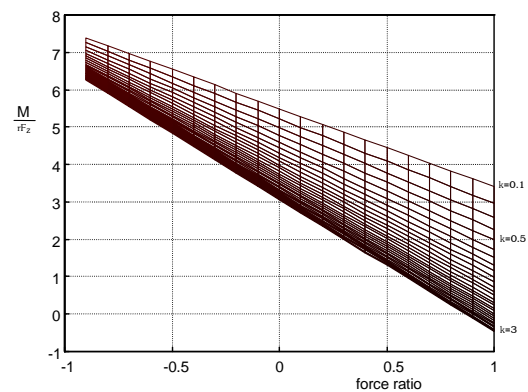
The main problems in assembly task are wedging and jamming. Wedging refers to equilibrium condition of peg due to reaction forces between peg and hole. Jamming refers to equilibrium condition of peg due to reaction forces and Insertion forces. Wedging and jamming diagrams of a single peg were constructed by Whitney at M.I.T. We, subsequently, construct wedging and jamming diagrams of dual pegs. The contact configurations of dual peg are one-point, two-points, three-points and four-points contact. The wedging diagram is constructed for outer two-points contact. Jamming diagram is constructed for two-points, three-points and four-points contact. We can use such information on a jamming diagram to facilitate robotic force control for assembly work.



Force sensor for force feedback experiment.

The analysis of dual-pegs in holes is a fundamental example that leads to the assembly

of parts having complicated geometry. Combining this knowledge with robotic manipulation, the true assembly automation can be realized.



Jamming diagram change its slope in case of three points outer contact.