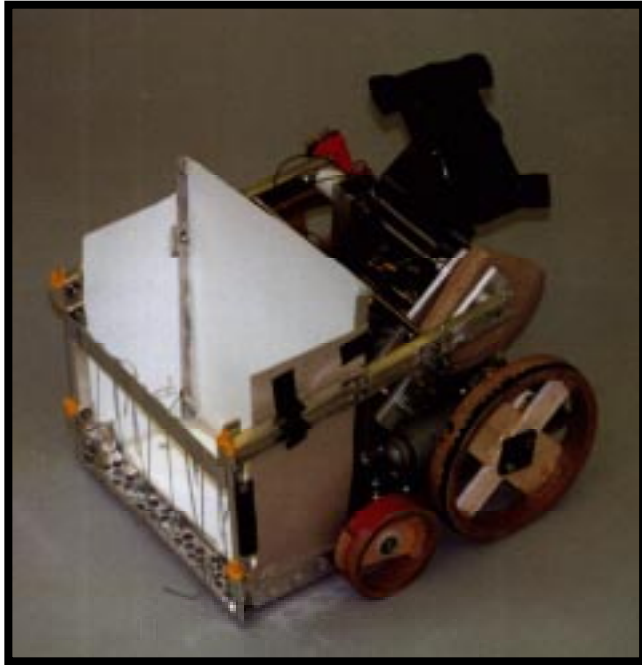


MIT 2.007: Design and Manufacturing I



Mechanical Engineering Design Contest: “Niagara Balls.” Spring 1996

Through its world renowned design contest 2.007 teaches mechanical engineering students aspects of mechanical design: problem definition, brainstorming, technical sketching, design selection, and modeling and mock-up construction. Two machines compete in each match, and the goal of this year’s competition was to get more ping-pong balls in your bin than your opponent gets in his.

After working with several different designs on paper, I elected to build a vehicle with a scoop for collecting ping-pong balls. My machine was driven by two, independent, electric motors connected directly to the rear wheels. The scoop featured a one-way rubber-band-valve through which balls popped when the scoop pressed them against a wall on the playing table.

To dump its balls into my bin, the scoop was raised by a friction drive system which limited the scoop’s range of motion without limiting that of the driving motor; the motor could turn forever in either direction without destroying the scoop or itself. In the contest, I was happy when my machine collected a respectable number of balls.

