

Mechanical Design of Miscellaneous Biped Hardware

**Biorobotics and Locomotion Lab
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Course Information

MAE 4900

Individual/Group Projects in Mechanical Engineering
3 Credits

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This brief report documents miscellaneous mechanical work carried out by Jon Kuriloff on the biped Ranger. This includes mounting shoulder pads on both ends of Ranger's torso, modifying the attachment of the robot's antenna, and machining part of its battery mounts.

The semi-circular foam shoulder pads, shown in Figure 1 below, are designed to protect Ranger's hardware in the event that it falls over, and are removable to allow for maintenance on Ranger. The shoulder pads have a slot cut out to fit around the metal frame of Ranger's torso. Velcro lines the sides of both the shoulder pads and Ranger's torso. To add rigidity, an octagonal polycarbonate plate is fixed to each shoulder pad with double-sided tape and to the metal frame on the top of Ranger with a cable tie. This plate prevents the pads from moving down with respect to Ranger when impacted.

Ranger's antenna communicates signals from the transmitter to the robot during operation. It now sticks upright through a hole in one of Ranger's shoulder pads, eliminating interference with other electronics on Ranger. A long piece of heat shrink tubing, fitted snugly in a hole in Ranger's shoulder pad, guides the antenna wire without rigidly holding it in place. This way, were the wire to somehow be yanked on, it would simply come out of the hole instead of ripping out and potentially damaging some electronics.

Finally, the battery mounts now have countersunk holes where screws attach the battery mounts to the robot's torso on either side. These battery mounts allow batteries to sit snugly and securely on the robot.

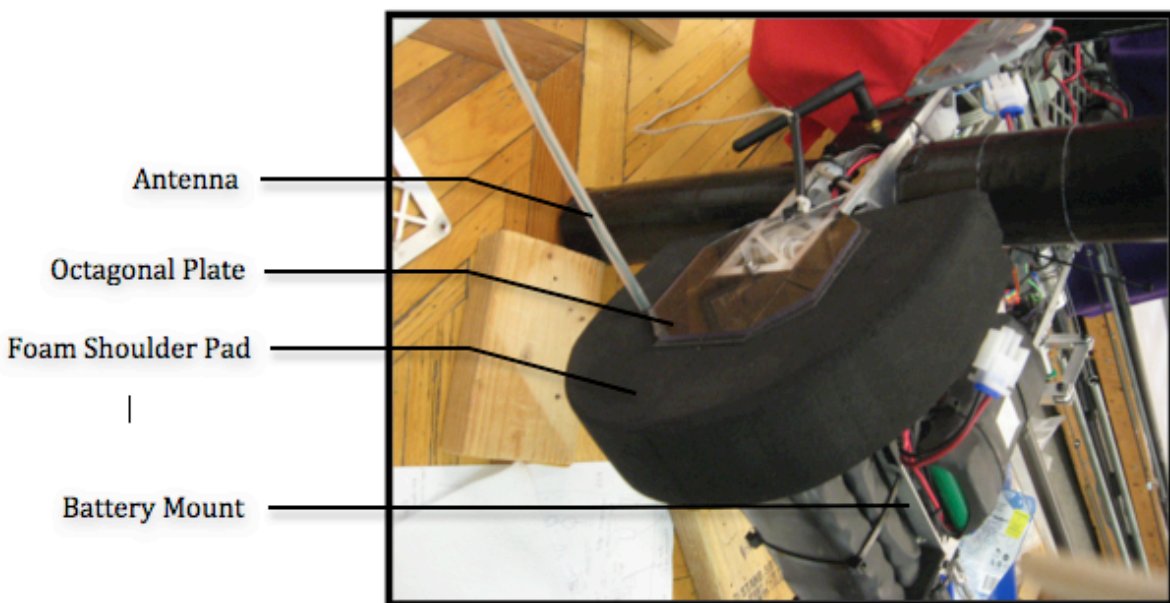


Figure 1: Components of Interest on Ranger