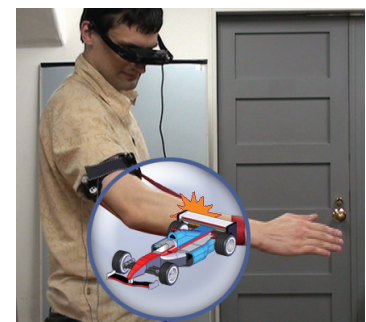
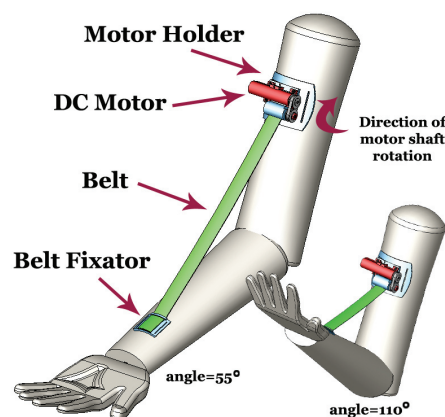
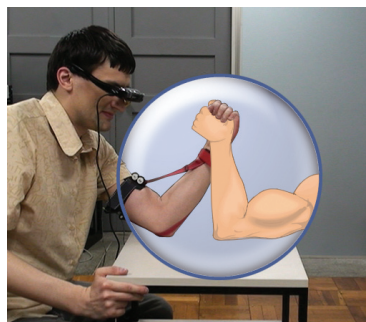
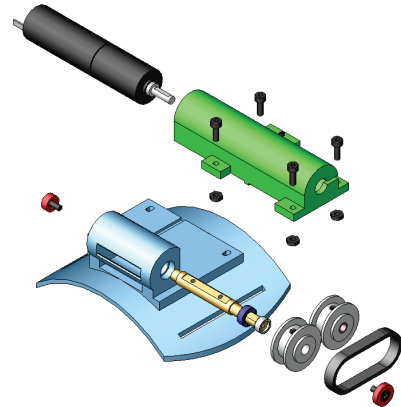
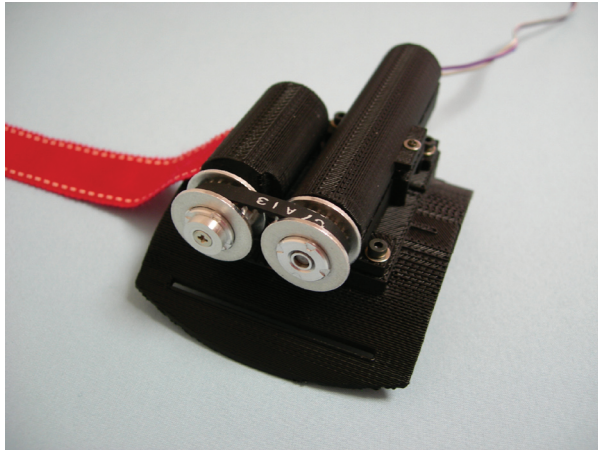


FlexTorque: Innovative Haptic Interface for Realistic Physical Interaction in Virtual Reality

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Kinesthetic stimulations, produced by forces exerted on the body, are sensed by mechano-receptors in the joints, tendons, and muscles. When a human hand holds a heavy object, its weight produces torques in the wrist, elbow, and shoulder joint. Each muscle generates a torque at a joint that is the product of its contractile force and its moment arm at that joint. The idea behind FlexTorque is to reproduce human muscle structures that allow us to perform dexterous manipulations and interactions. The result is a wearable haptic interface that presents realistic kinesthetic stimulus to the human arm.

FlexTorque suggests new possibilities for highly realistic, very natural physical interaction in virtual environments. There are no restrictions on the arm movement, and it is not necessary to hold a physical object during interaction with objects in virtual reality. Because the system can generate strong forces, even though it is light-weight, easily wearable, and intuitive, users experience a new level of realism as they interact with virtual environments.