Controllable CVT Device

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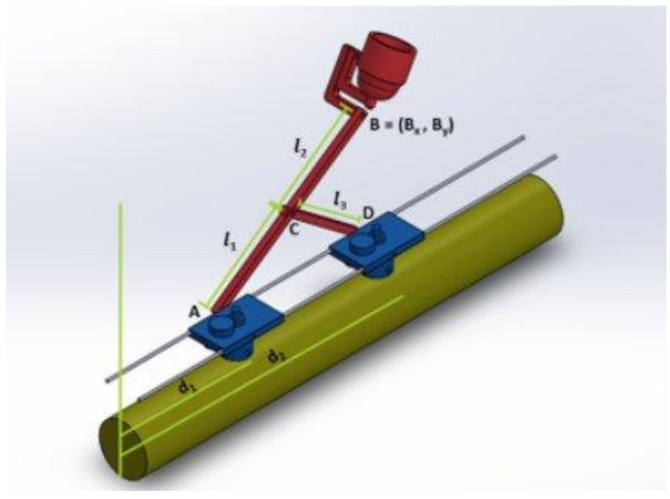
Objective

The objective of this project is to enhance the education of haptic robotics by using Continuously Variable Transmission (CVT) technology to produce engaging, autonomous motion.

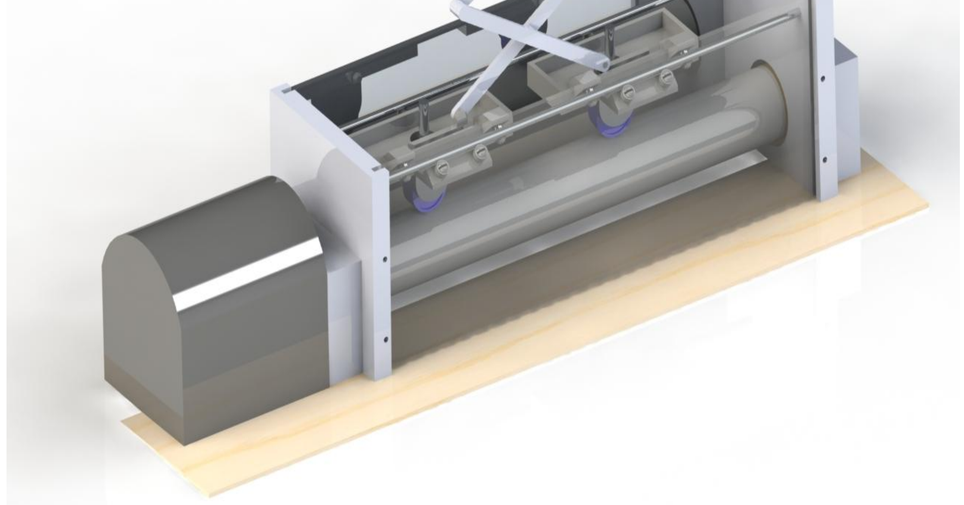
Background



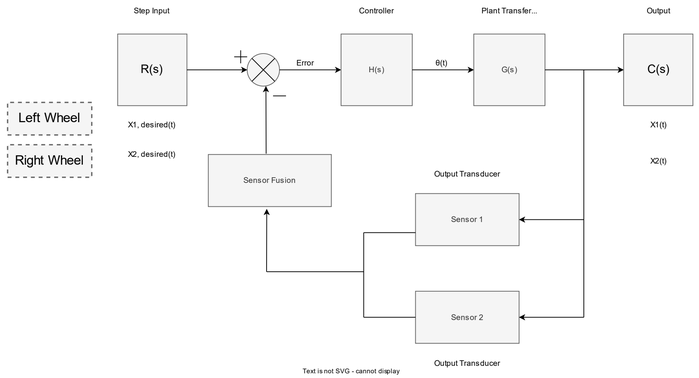
Wheels (blue) are steered on a cylinder (yellow), changing the system's effective gear ratio. The translational velocity of each wheel is changed, moving a point (red) in two-dimensional space.

Design

The design consists of a CVT-powered shape-guessing game using a focused light source to draw curves on a photo-reactive screen.



Control System



The step input is the desired position of the wheels along the cylinder. The transfer function is derived from inverse kinematics. Position is then sensed and consolidated. The controller applies a gain to the error based on the control input.

Testing and Validation