

## 1 Introduction & Methodology

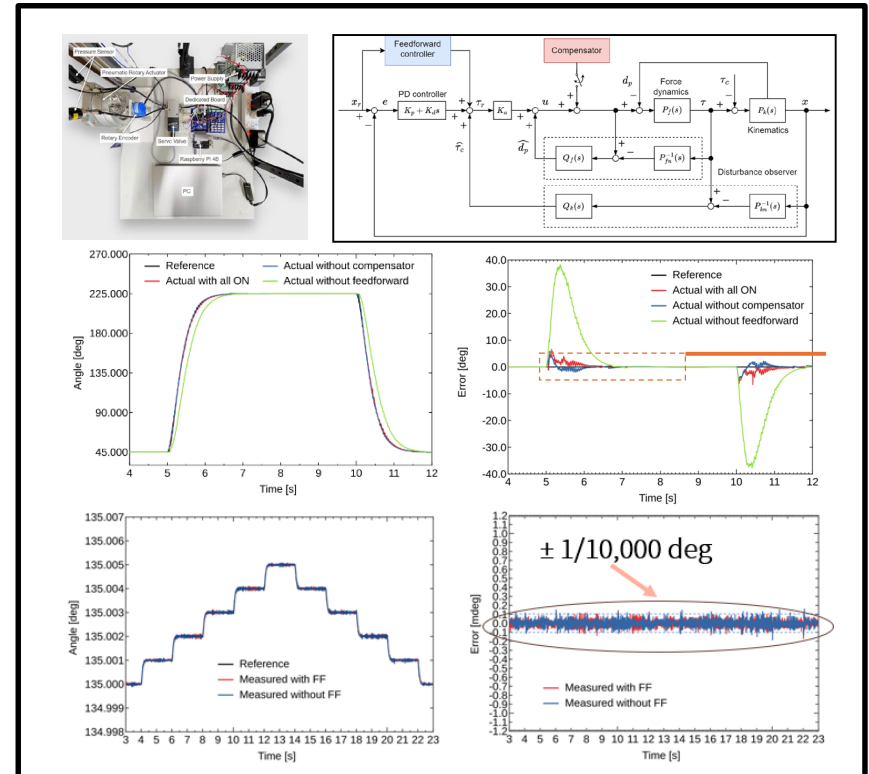
Rotary pneumatic actuators are popular for their simplicity, speed, safety, and power-to-weight ratio. However, they struggle to match the precision of electrical actuators due to nonlinearities in pressure response and friction. This paper proposes a new control system with a compensator to achieve high-precision positioning in rotary pneumatic actuators.

## 2 Results

The results showed high precision obtained during the steady state. The accuracy obtained in the steady state is 1/10,000 deg (0.1mdeg). It also showed quick response and excellent tracking during the transient response due to implementation of feedforward control.

## 3 Conclusion

Study designed and implemented compensator-based control that achieved high precision of 1/10,000 deg using general purpose rotary actuator.



The proposed compensator works for precise positioning in the steady state and feedforward improves tracking performance for reference trajectory in dynamic response region.

