Due May 8th (email only)

Solve only one of the following:

1. **High-order observer for PUMA robot**: Assuming you were successful in tuning the robust and adaptive controllers of HW6, add a Nicosia-Tomei [1] high-order observer to allow operation with position sensing only.

2. **Sliding Mode observer for two-link robot case study**: For zero external force, develop and deploy a sliding observer [2] based on the simplified second-order independent joint model. You must calculate a nominal value for $f$ and a bound on $\Delta f$.

**References**
