

# Robust Learning of Sequential Motion from Human Demonstrations to Enable Robot-guided Exercise Training

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## Challenge (2020)

- Learning to optimize a trajectory
- Dealing with adversarial demonstrations



## Solution:

- **Formalizing PSM as an Inverse Optimal Control problem:** 1. Optimizes Energy, Torque, and Jerk 2. Considers Dynamic limitations of the robot as constraints 3. Can deal with end-effector loads (IROS 2020)
- **A Maximum-entropy based robust policy learning framework:** Identify and discard adversarial demonstrations from training pool (NeurIPS 2020)

## Scientific Impact

- A robust trajectory learning algorithm
- Adversaries in LfD

## Broader Impact

- Motor rehabilitation service is critical for healthy living.
- Therapist shortage can be mitigated by leveraging robots that can learn from demonstrations