

Learning and Adapting Robot Motion Control from Demonstration and Correction

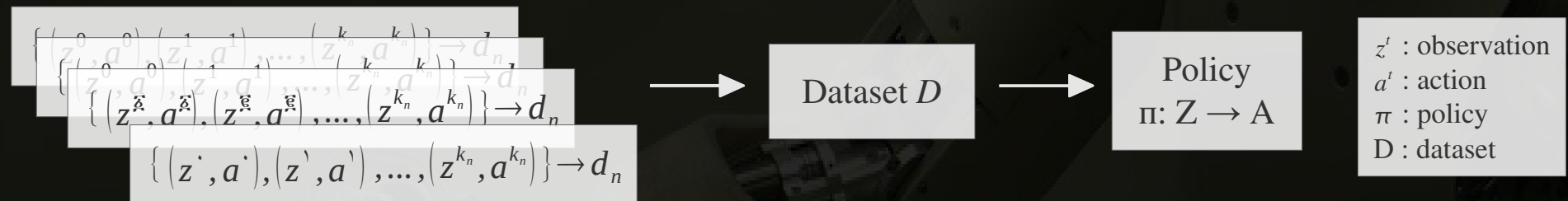
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Learning from Demonstration with Corrections

To learn a motion control **policy**, mapping world observations to robot actions.



- ✓ : Behavior representation; dataset focus; intuitive for humans...
- ⊗ : Correspondence issues; dataset sparsity; suboptimal demonstrator...

Approach: Adapt a policy learned from demonstration with human feedback.

Adaptation for policy refinement, policy scaffolding, policy reuse.

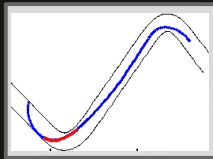
Domain: Mobile Robot, Low-level Control

Challenges:

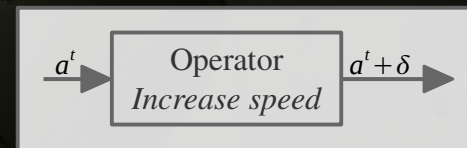
Corrections in *continuous* state-action spaces.

Rapid sampling rate.

F3MRP Framework



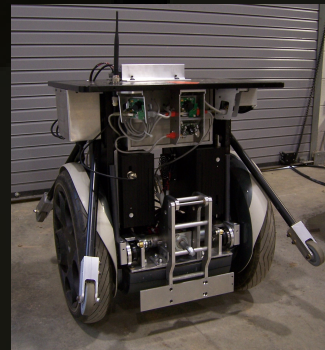
Advice-operators



Purpose of feedback:

Refine demonstrated behavior.

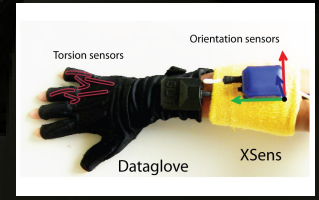
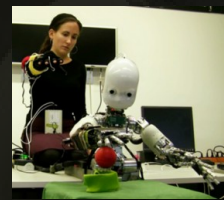
Scaffold demonstrated primitives.



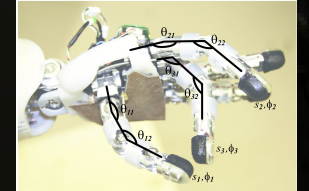
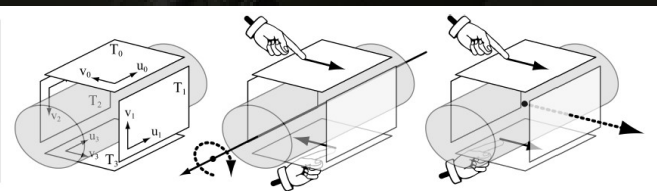
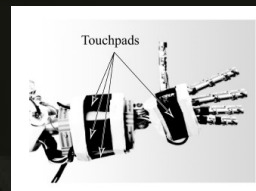
Domain: High-DoF Humanoid, Manipulator Control

Challenges:

Control of many DoF during teleoperation.



Tactile corrections.



Purpose of feedback:

Refine demonstrated behavior.

Reuse in a new policy.

Adaptation to changing contact.

