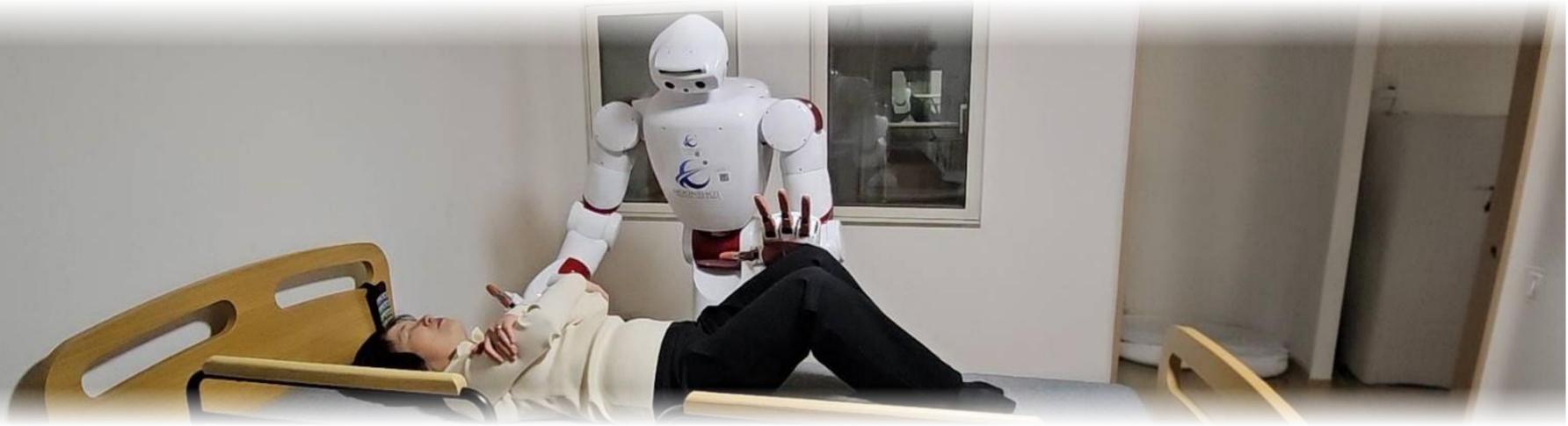


“It Worked on a Mannequin, But Not on a Human.”

Lessons from Human Discomfort in Robotic Repositioning



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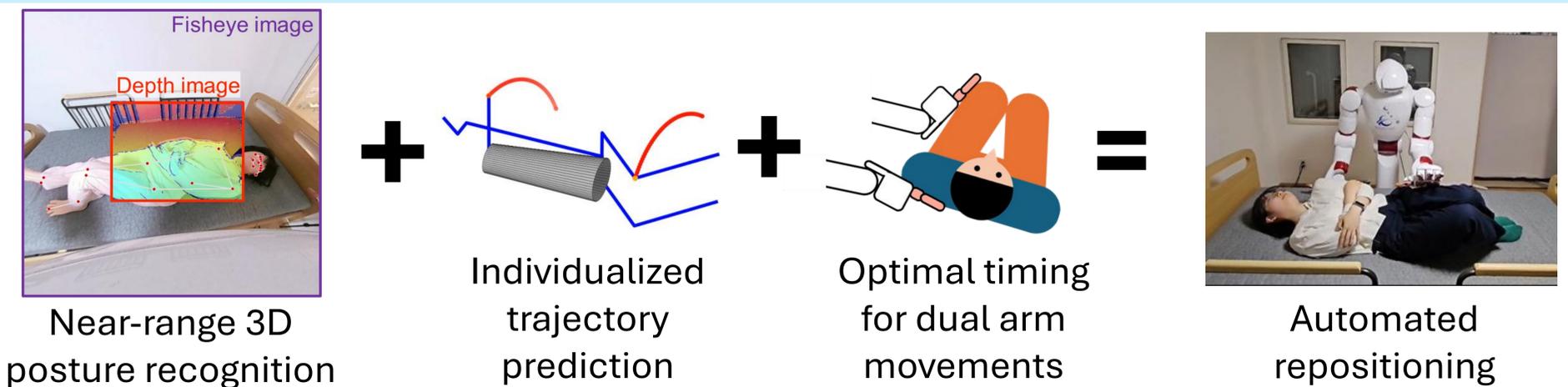
Mechanical success ≠ Human comfort

✓ Repositioning succeeded on mannequins

⚠ Human participants felt discomfort

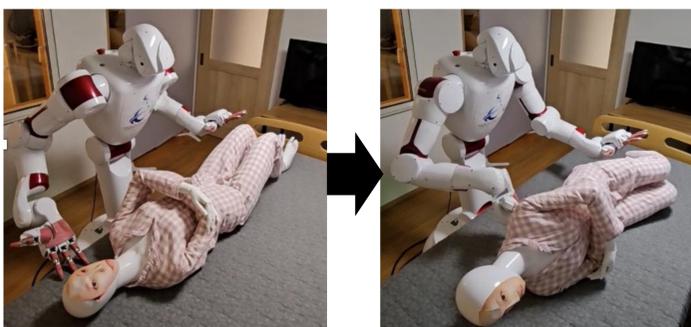
Why does the same motion feel different?

Proposed Method



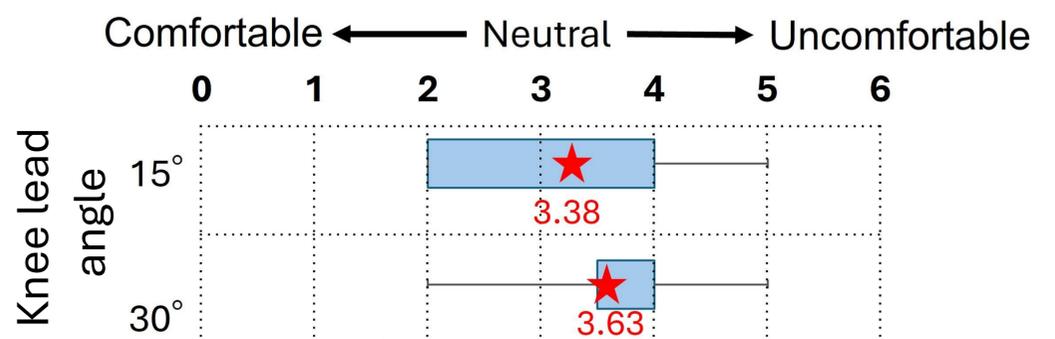
Experimental Result

Mannequin

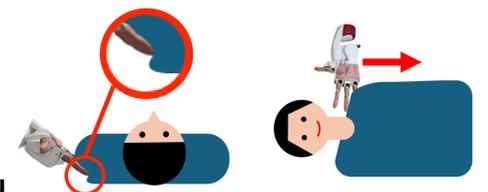


- ✓ Successful repositioning
- ✓ Various body sizes
- ✓ Mechanically feasible

Human



- ✗ Significant friction occurs during hand insertion
- ✗ Robot's finger gets stuck
- ✗ Shoulder rotation under load



The Gap Between Feasibility and Experience

Mannequins simulate mechanics, not sensation

Human bodily experience

- Pain / • Trust & safety perception
- Unexpected pressure / • Friction sensation

Upstream Redesign Strategies

Low-friction hand materials/ Redesign of reaching trajectory / Human-in-the-loop validation

