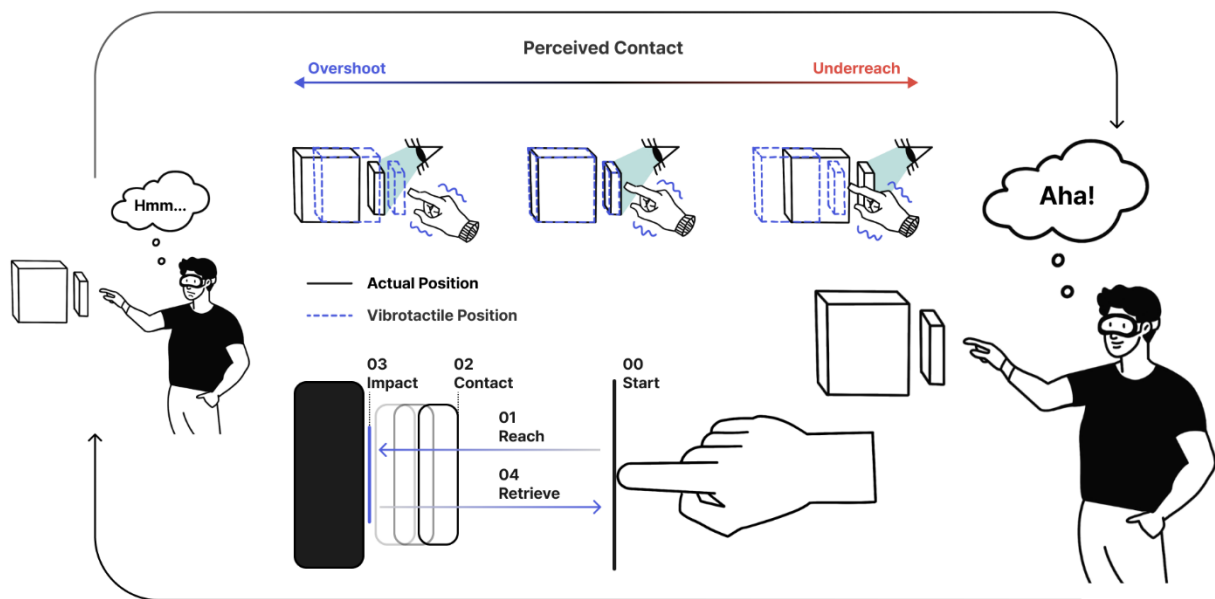


Making Mid-air Button Contact Perceptible: Adaptive Feedback Model for Enhancing Interaction Saliency in VR



Summary: Interacting with mid-air buttons in VR is inherently challenging, as users primarily depend on visual cues to engage with intangible, floating interfaces. The absence of haptic feedback, particularly force feedback, makes it difficult to perceive a button press or detect the “**bottom-out**” point. To address this limitation, we propose an “**adaptive vibrotactile feedback model**” that delivers state-dependent signals across key interaction phases: reach, contact, impact, and retrieve. Crucially, during the impact phase, our system dynamically adjusts the position of the vibrotactile stimulus based on the user’s prior trial behavior. This aims to enhance perceptual saliency and reduce both **overshoot** and **underreach** during mid-air interactions.