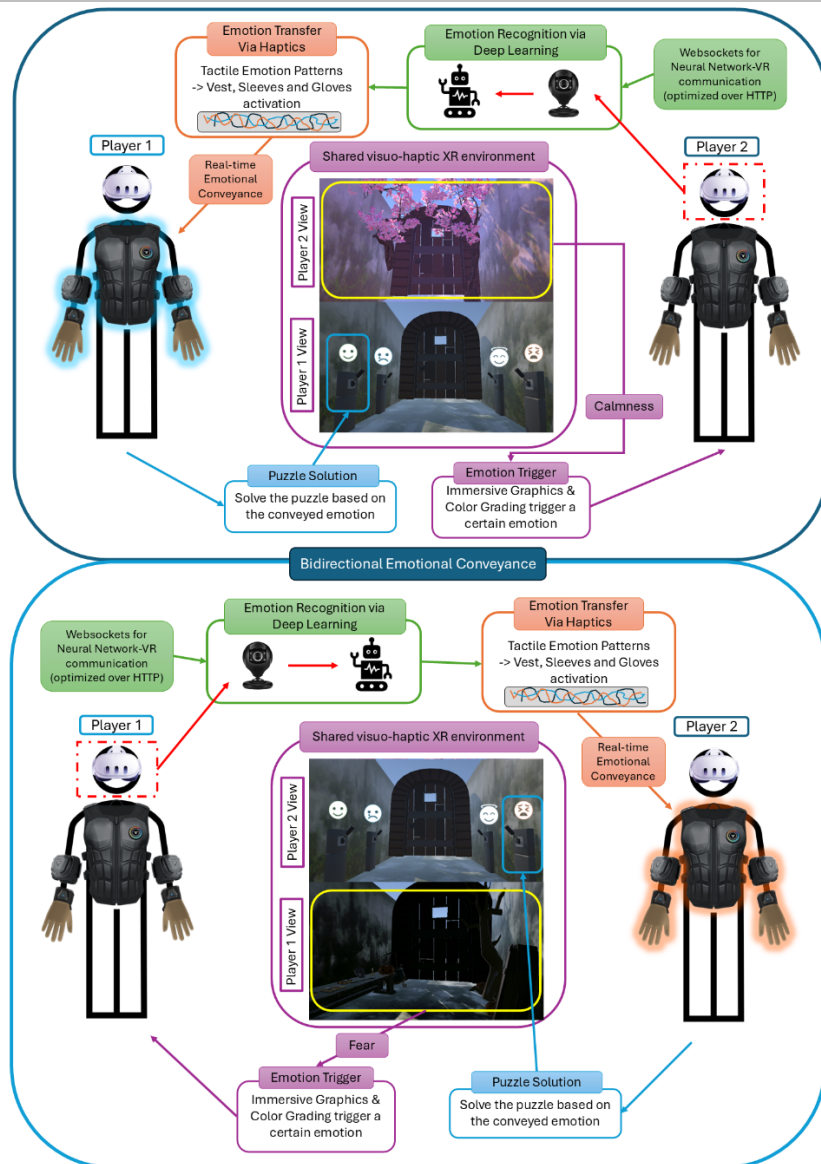


## Enhancing Emotional Communication in Shared Visuo-Haptic XR Environments through Vibrotactile Actuation



**Summary:** Our project aims to enhance human interaction in shared visuo-haptic XR environments through emotional haptic feedback, addressing current XR limitations: limited non-verbal communication, lack of emotional awareness in virtual interactions, and absence of tactile emotion sharing. Our prototype encompasses a two-user interaction scenario in a shared visuo-haptic XR environment, where emotions are captured, analyzed, and rendered via haptics using deep learning-based emotion estimation. Thus, our multimodal framework incorporates: (i) an emotional trigger mechanism through graphic and visual effects, (ii) facial emotion recognition via deep learning, (iii) emotion-to-haptic mapping, (iv) emotion transfer via haptics, and (v) real-time emotional conveyance.