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Towards a Surface-Based Extended Reality Musical Instrument for Keyboardists

Hand tracking is one of several key factors for embodied performance with an extended reality musical instrument (XRMI). Current vision-based hand tracking systems that are integrated with head-mounted XR devices are error-prone and have several failure cases in the context of XRMI performance.

How can we overcome the limitations of vision-based tracking approaches? We have investigated the use of surface electromyography (sEMG) wearables + deep learning for articulated finger tracking without relying on cameras. The first results are promising, however, more work is needed for fully articulated hand tracking based solely on sEMG sensors.