

## Abstract

An inverted sensorimotor training system is disclosed, comprising both physical and virtual reality embodiments that invert the user's visual field to challenge and retrain hand-eye coordination. The system includes an optical **inversion goggle** apparatus with a handheld pointer for real-world tasks, as well as **virtual reality (VR)** and **augmented reality (AR)** implementations that present inverted visual environments and interactive, gamified exercises. An **adaptive control module** monitors user performance (including eye-tracking data) and adjusts task difficulty in real-time to optimize learning. Wearable **haptic feedback devices** provide tactile cues and reinforcement during tasks. The system supports multiple modes – training, testing, and competitive multiplayer – with persistent user progress tracking and analytics. Applications include therapeutic use for visual disorders (e.g. amblyopia), neurological rehabilitation (e.g. stroke recovery), and enhancement of sensorimotor skills in various populations. The invention provides a comprehensive platform for accelerated adaptation to inverted vision through engaging, multi-modal training experiences.