

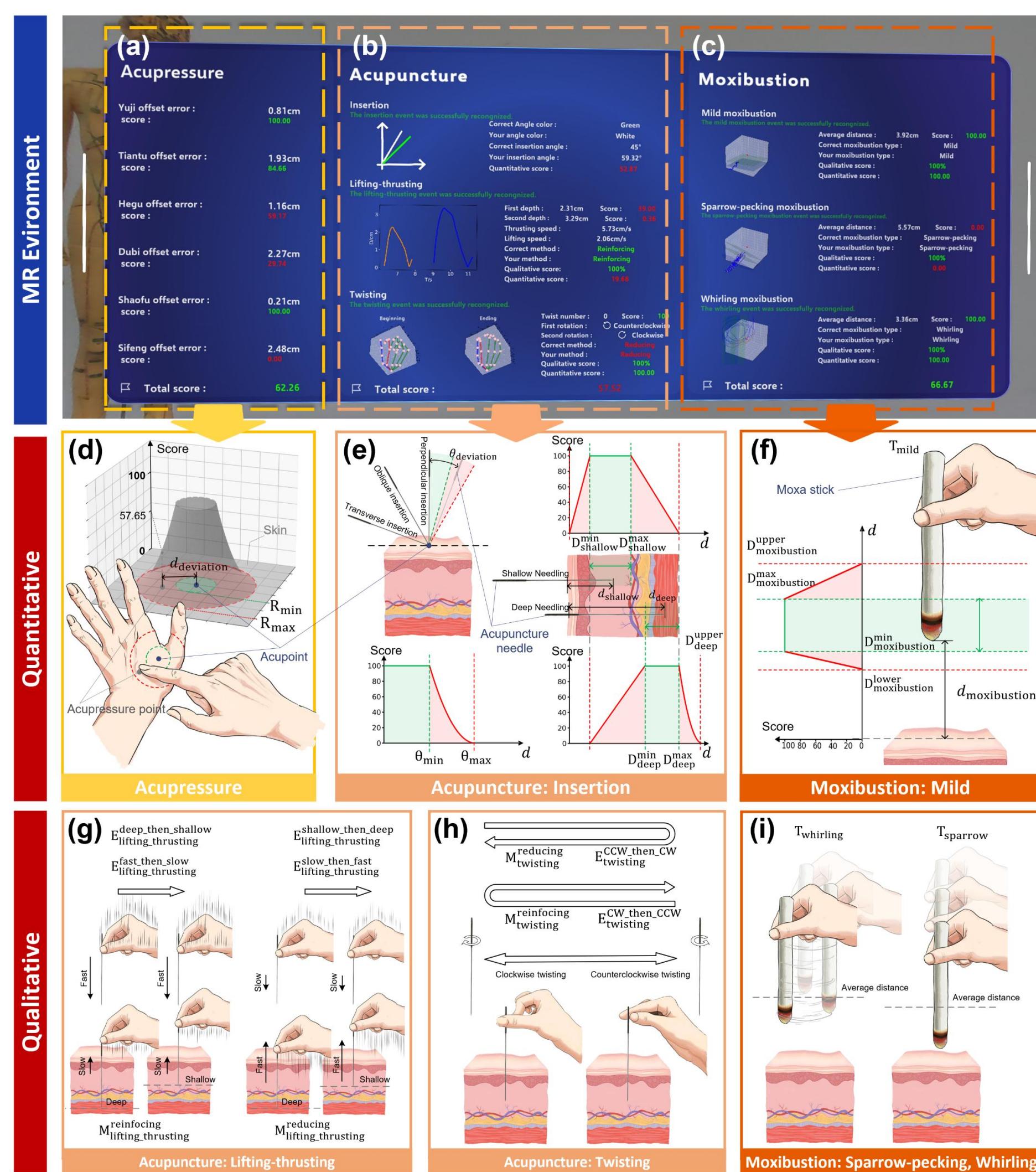
A Mixed Reality Framework for Acupoint Therapy Teaching: Localization, Practice and Evaluation

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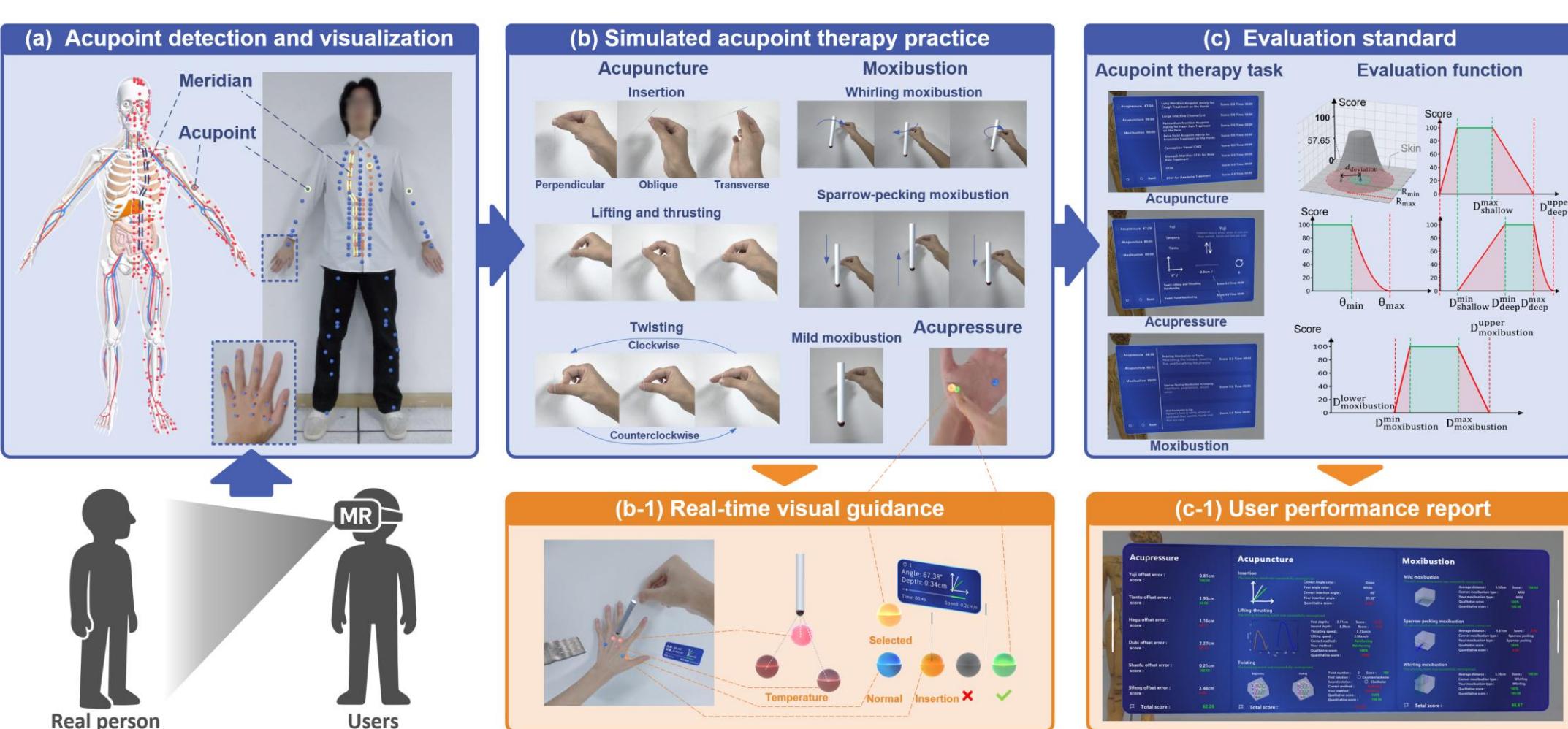
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Motivation

- Traditional acupoint therapy teaching (textbooks, apprenticeships) lacks spatial accuracy and immersion.
- Existing AR/MR teaching systems are limited to virtual models, single body parts, and simulated practice of operations.
- No existing work provides evaluation standards with scoring functions to guide user improvement.



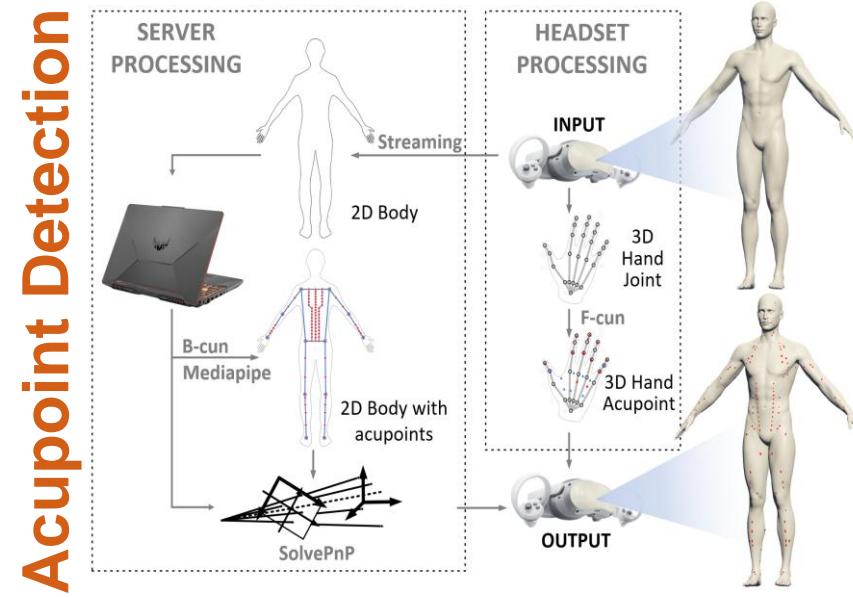
Overview of Our Framework



Contribution

Full-Body Acupoint Detection and Real-Time Visualization in MR

- The first MR framework for real-time acupoint detection on real people, covering hands, limbs, and torso.
- Rendered acupoint spheres enable interaction and support simulated therapy practice.



Simulated Practice of Advanced Therapy

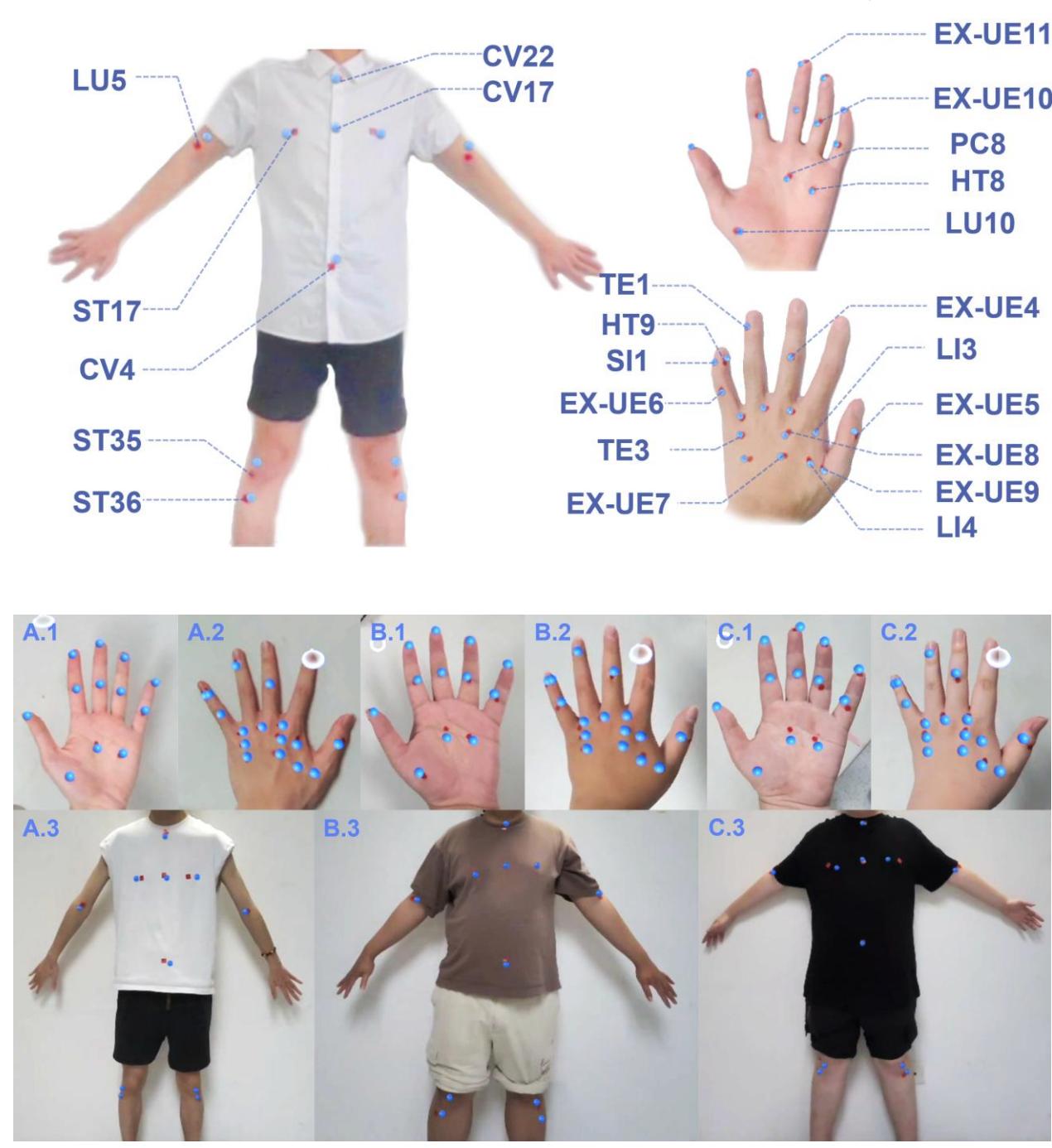
- Our framework enables MR-based simulated practice of advanced acupuncture (lifting-thrusting, twisting) and moxibustion (mild, sparrow-pecking, whirling), integrating TCM reinforcing-reducing theory.
- Real-time visual guidance helps users instantly correct errors.

Evaluation Standards and User Performance Report

- We design comprehensive evaluation standards based on TCM theory.
- Post-training user performance report with data visualization and scores is provided to improve user learning accuracy and efficiency.

Results

- Higher Accuracy:** Our framework achieves high accuracy in acupoint detection and maintains a stable 90 FPS for a smooth user experience.
- Expert Evaluation:** Professional physicians evaluated the framework's performance and confirmed that it is sufficient for teaching requirements.
- Improved Skills:** Participants using our framework showed significant improvement in the 3D localization of acupoints and proficiency in therapy techniques compared to groups using textbooks or a 3D model.
- Positive User Feedback:** The majority of users reported high satisfaction with the system's usability, immersion, and educational value.



Results of User Study

