

CASE STUDY

UNIVERSITY OF MICHIGAN

School of Medicine

Enhancing Emergency Response Through Collaborative VR

Challenge · Solution · Innovation



THE CHALLENGE

Simulating Real-World Stress, Anxiety, and Time Pressure

- Need for immediate response to sudden cardiac events
- Time pressure causes poor communication & decisions
- Mannequin training lacks cost-effectiveness & realism



THE SOLUTION

Non-Linear Collaborative Gamified Simulation

- Co-op VR sessions replicate precise conditions
- Monitor movement, speech & anxiety (heart rate)
- Team analytics per session identify mistake patterns



THE INNOVATION

iREACT: 270-Physician Cardiac-Arrest VR Trial

- VR Recorder captures full 3D session reconstruction
- Eye tracking & cognitive load spatial analysis
- Vitals visualization of the virtual patient

Clinical Validation: iREACT Cardiac-Arrest Team Training

Clinician Evaluation (rated 1–5)



Resident physicians (n=5) on the hospital cardiac-arrest team and 12 ACLS experts rated iREACT on a 1–5 scale. Willingness to recommend (4.0) and educational value (3.6) scored highest, validating the simulation's training value.

Multi-Modal CRM Analytics

250

unique cognitive processes mapped in cardiac-arrest care

A cognitive task analysis mapped 250 unique cognitive processes in cardiac-arrest care. iREACT captures timestamped actions, eye-gaze, heart rate, cognitive load (HP Omnicept) and closed-loop communication — enabling objective CRM assessment. Full clinical trial ongoing at U-Michigan Medicine (270 physicians, 12 months).

Results That Matter



Vitals Tracking

Real-time patient vital signs

[Read the iREACT trial →](#)



Team Analytics

Co-op session performance insights



Cognitive Load

Eye-tracking spatial analysis



3D Replay

Full session reconstruction