Fluoroscopy-style imaging during trainin

CV-001

CARDIOVASCULAR SIMULATOR

CV-001-SIMULATOR is an affordable, high-fidelity simulator for cardiovascular angiography training that uses real clinical instruments, including catheters and guidewires, within an immersive virtual environment. The system enables physicians and trainees to practice endovascular procedures with authentic instrument interaction, bridging the gap between traditional computer-based simulation and real-world catheterization labs.

CV-001 system setup

Built on advanced physics-based modeling and real patient anatomies representing a broad spectrum of navigational challenges, CV-001 accurately reproduces vessel-instrument interactions, allowing users to develop essential skills such as catheter navigation, guidewire manipulation, contrast injection, and fluoroscopic image interpretation. Rigorous procedure representation helps the trainee to understand key elements of the process, avoid typical mistakes, ensure patient safety, and consciously follow the protocol. The use of genuine instruments ensures realistic hand–eye coordination and procedural workflow, preparing clinicians for real patient interventions

Designed for hospitals, universities, training centers, and clinical workshops, the platform offers a cost-effective alternative to conventional angiography simulators without compromising training quality. Modular scenarios curated by experienced physicians — from basic vascular access to complex coronary and peripheral interventions — allow progressive learning tailored to different experience levels. Integrated performance analytics provide objective feedback on precision, safety, and efficiency.

Designed for
hospitals
universities
training centers
clinical workshops

Performance analytics dashboard interface on the tablet

CV-001 expands access to practical cardiovascular training, enabling repeated practice without radiation exposure, disposable costs, or patient risk. It supports self-paced learning and structured curricula, helping institutions deliver modern, hands-on education with minimal infrastructure requirements. High portability enables effortless mobility of the solution, ad-hoc presentations at convenient locations, and allows users to perform such self-training at home.

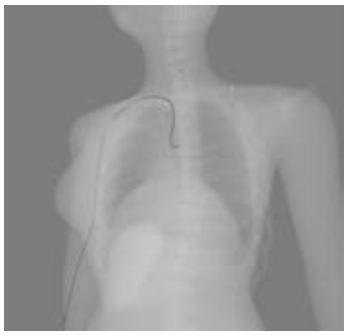
CV-001 empowers the next generation of interventional cardiologists and radiologists to train safely, effectively, and anywhere

Progressive learning

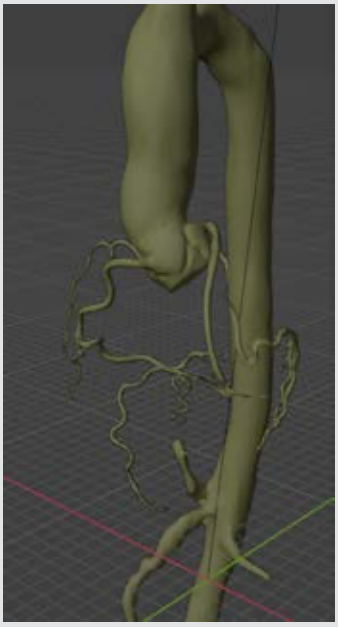
Level 1

Basic elements of the procedure, learning consecutive steps following one another — preparation and access

- femoral/radial access
- selection of the case: adequate catheter size and shape
- basic wire handling and safety



Level 2



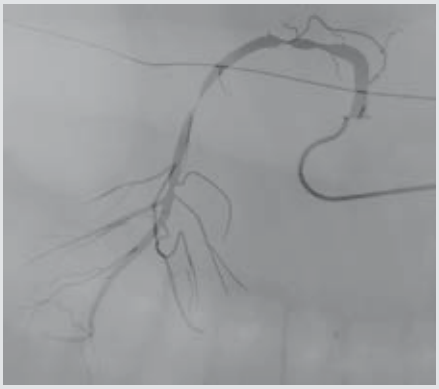
Navigation

- aortic arch navigation
- tortuous anatomy
- selecting branches, using bends of the instrument
- firm placement of instruments inside the coronary arteries

Level 3

Coronary / Peripheral

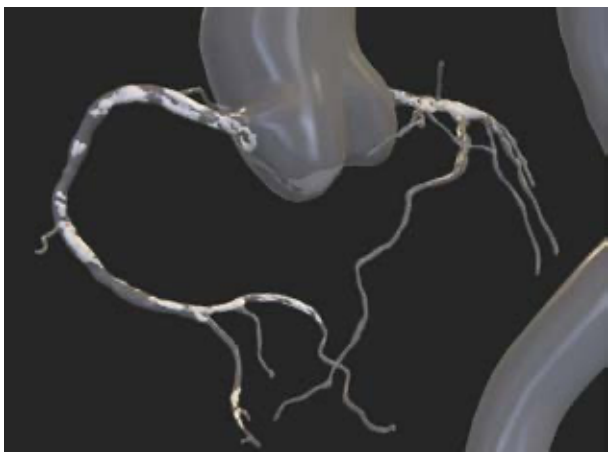
- coronary engagement (LCA/RCA)
- contrast injection + fluoroscope projection interpretation
- catheter tip pressure monitoring



Level 4

Complex cases

- challenging anatomy, tight landing zones, severe tortuosity
- complications and time-critical decision points
- protocol adherence + error prevention



Technical requirements

CV-1 Tracker device:

USB-powered sensors station providing accurate real-time tracking of the catheter and the guidewire;
includes steering module for C-Arm and injection interaction

iPad/Android tablet on a stand:

unning physical simulation of the instruments and the patient's body, displays the X-Ray view, realistically mimicking the fluoroscope display, in 60-120 fps (depending on specification)

CV-001

Portable, high-fidelity simulator for cardiovascular angiography training — with haptics and real instruments

CV-001 lets physicians and trainees practice endovascular procedures using real clinical catheters and guidewires inside an immersive virtual environment. It bridges the gap between classic computer-based simulation and the real catheterization lab.

What you can train

- Catheter and guidewire navigation and positioning
- Various instrument shapes and sizes
- Contrast injection workflow
- Avoidance of errors
- Proper reaction to adverse events and own errors
- Fluoroscopic image interpretation
- Procedural steps and protocol discipline

The simulator is currently in the final stages of development and user testing.

Realism that matters

- Physics-based modeling for realistic
- vessel–instrument interaction
- Haptics mimicking adequate friction and vessel contraction events
- Real patient anatomies covering a wide range
- of navigational challenges, including rare cases
- Genuine instruments to build true hand–eye coordination and procedural flow
- Rigorous procedure representation to help avoid common mistakes and support patient safety
- Self-training program designed by clinicians and tutors with many years of experience in teaching junior cardiologists

Designed for education at scale

For hospitals, universities, and training centers, CV-001 offers a portable, cost-effective alternative to conventional angiography simulators —without compromising training quality

- Modular scenarios curated by experienced physicians
- Progressive learning: from basic vascular access to complex coronary and peripheral interventions
- Built-in performance analytics with objective feedback on:
    - safety
    - precision
    - efficiency

Safe. Repeatable. Built for Training Programs.

Deliver consistent, hands-on angiography training without:

- radiation exposure
- disposable consumable costs
- any patient involvement or risk.

CV-001 is designed for education at scale: it supports self-paced practice, instructor-led sessions, and structured curricula—with minimal infrastructure requirements. Its portable setup enables easy deployment across classrooms, simulation labs, and partner sites, making it ideal for cohort training, skills bootcamps, and outreach demos.

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