

# Open-H-Embodiment Collaborative Healthcare Robotics Dataset Initiative

## 1 Introduction

Open-H-Embodiment is a new dataset generation and collection effort led by JHU, TUM, NVIDIA, and other partners to accelerate the development of general-purpose, multimodal healthcare-robotics foundation models. Building on the success of the [Open-X Embodiment dataset](#), our goal is to align leading institutions to create **at least 200,000 real and synthetic medical procedure episodes consisting of synchronized video recordings and sensor data** spanning surgical, ultrasound, and other related healthcare subtasks and sensor data including kinematics, force, and custom medical views. The resulting datasets will be used to train downstream multimodal vision language action (MVLA) models.

## 2 Steering Group

Role	Name	Affiliation
Industry Lead	<b>Dr. Mahdi Azizian</b>	NVIDIA
Surgical Robotics Lead	<b>Prof Axel Krieger</b>	Johns Hopkins University
Ultrasound Robotics Lead	<b>Prof Nassir Navab</b>	Technical University of Munich

## 3 Objectives & Outcomes

1. **Data Alignment** – Curate a minimum of 200,000 expert and sub-expert trajectories covering robotic surgery, robotic ultrasound, and other healthcare tasks.
2. **Synthetic Scaling** – Leverage I4H (Isaac-for-Healthcare) pipelines to augment real data with high-fidelity simulations and domain-randomised scenes.
3. **Generalist Policy** – Enable training of a single, zero-shot capable policy (multi-embodiment, multi-task) that can be fine-tuned with  $\leq 10\%$  of current data requirements.
4. **Open Source Release** – Publish cleaned datasets and model weights under a permissive licence no later than March 2026.

## 4 Scope of Work

Participating teams may submit for **one or more** of the following task groups:

### 4.1 Robotic Surgery

- Example skills: needle-passing, suture-tying, tissue retraction, camera control, surgical dissection, anastomosis, cauterization, irrigation and suction.
- Platform examples: dVRK, [Raven](#), Virtual Incision MIRA, and others.

### 4.2 Robotic Ultrasound

- Example skills: automated probe placement, sweep acquisition, fetal biometry.
- Robotic Platforms: KUKA LBR Med, UR-series, Franka FR3, custom cobots with force-feedback probes.
- Non-Robotic Platforms: Navigation, tracking and recording of medical tasks e.g. ultrasound imaging.

### 4.3 Other Healthcare Robotics

- Examples: mobile X-ray positioning, medication dispensing, hospital logistics, patient vital sign acquisition, imaging robots, radiation therapy robots.
- Platforms: mobile manipulators, collaborative arms, AMRs.

### 4.4 Proposal Requirements

Each proposal **must** commit to:

- Contribute  **$\geq 2,000$  trajectories per proposal** for real (or physically simulated) data, or 10,000 for digitally simulated.
- Provide time-aligned sensor streams
  - Camera Streams (RGB/RGB-D, wrist, room)
  - Robotic kinematics (pose, force/torque, other, etc.).
  - Corresponding medical images and/or video (ultrasound b-mode, surgical video).
- Deliver data in the LeRobot data format.
- Supply calibration data and robot CAD and kinematic-tree descriptions (USD, URDF, DH parameters in any other format, etc.).
- Data type, in order of preference: Clinical, ex-vivo, table top, simulation.

We **encourage** proposals to have:

- Provide time aligned:
  - Narration / description of the sub-task being performed (audio/text)

- Correlated anonymized patient information if available.
- Label demonstration quality (expert, intermediate, novice) and task success (failure, recovery, success).

## 5 Timeline

Milestone

<b>Private Recruitment of leading groups begins.</b>	May 19, 2025
<b>RFP released</b>	Sep 26, 2025
Public Proposal submission deadline	<b>Oct 31, 2025</b>
Data collection window	Sept 26 – Jan 16, 2025
Data Cleanup/Standardization	Jan 16 - Jan 30 2025
Model training & validation	Jan 30 – Feb 27, 2026
Public release of dataset and VLAs	March 2026

## 6 Eligibility & Partnership Models

- **Academic institutions, start-ups, and industrial healthcare firms** are welcome.
- International participation is encouraged.
- Consortia of multiple *organisations* may submit a joint proposal with a single lead.

### Collaboration Benefits

Selected partners will be named co-authors on both the Open-H-Embodiment dataset publication and the follow-up paper describing the resulting generalist healthcare-robotics policy.

Teams will also receive early-access evaluation checkpoints of the generalist healthcare VLA model, and the dataset itself, for their own downstream experiments.

Participating teams will also receive recognition during the dataset and model releases at NVIDIA GTC 2026.

## 7 Proposal Requirements

Submissions (single PDF,  $\leq 5$  pages excluding appendices) must include:

1. **Executive Summary** ( $\leq 500$  words).
2. **Task & Skill Selection** – List target tasks, robots, sensors, and number of trajectories.
3. **Technical Approach** – Data-collection methodology, quality-assurance, privacy safeguards (HIPAA/GDPR).
4. **Team Qualifications** – Key personnel biographies; prior related work.
5. **Project Plan** – Work-breakdown structure, Gantt chart aligned with Section 5 timeline.
6. **Data Rights & IP Statement** – Confirmation of intent to release dataset under the **Creative Commons BY 4.0** licence (or compatible) and comply with steering-group IP policy.

Submit Proposals to: [shuver@nvidia.com](mailto:shuver@nvidia.com) with “Open-H RFP” as the title.

## 8 Data Governance, Ethics & Compliance

- **Patient Privacy** – All human-subject data must be de-identified to HIPAA Safe Harbor standards or equivalent.
- **Regulatory** – Proposers are responsible for obtaining IRB/ethics approval where required.
- **Licensing** – Final datasets will be released under CC BY 4.0; synthetic assets must be free of third-party IP encumbrances.

## 9 Contact Information

- **Technical Questions:**
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