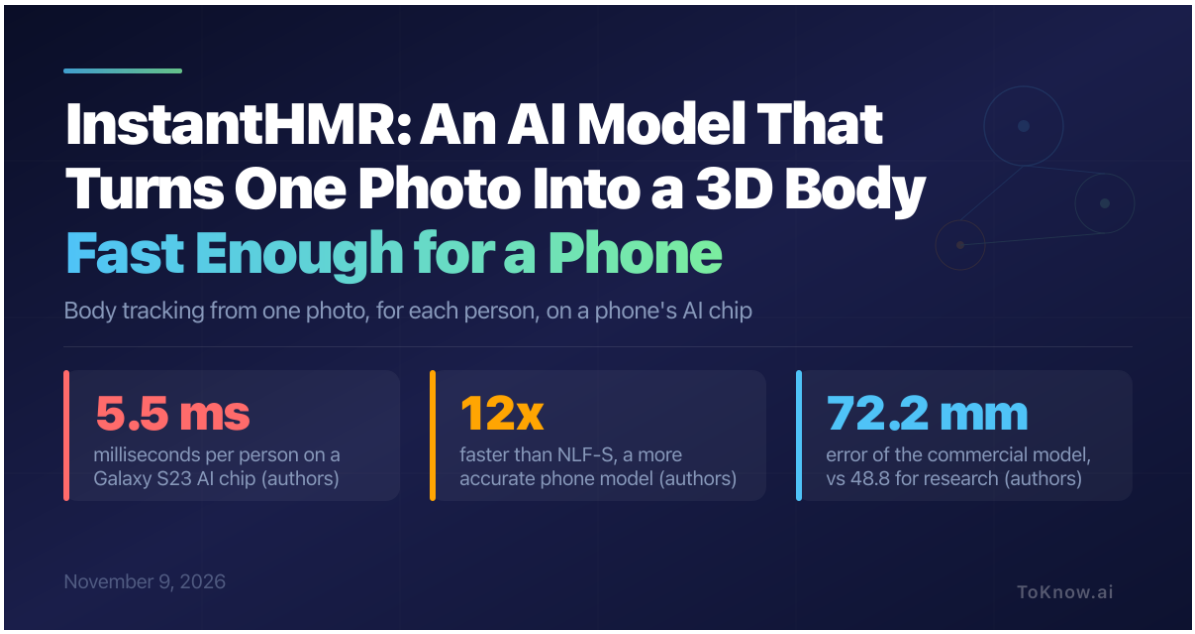
InstantHMR: An AI Model That Turns One Photo Into a 3D Body Fast Enough for a Phone

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InstantHMR is an AI model that turns one photo into a 3D digital body for each person in it. App builders and researchers can use it for fitness games, rehabilitation, VR and animation, without a motion-capture suit or studio. It uses Meta's Momentum Human Rig, a body model

with a skeleton and a 3D mesh (a net of points over the skin). On a Galaxy S23's AI chip, the authors report 5.5 milliseconds per person for the medium size, 4.6 for the smallest. On EMDB, a test of people filmed in everyday places, its joints land 48.8 millimetres from the true positions on average, after the bodies are lined up.

An app can read poses on the phone instead of sending video away. Two other phone-ready models, NLF-S and NLF-L, are more accurate but take 68 and 125 milliseconds per person on the same chip, 12 and 23 times longer. Meta's SAM 3D Body, whose dataset supplied the labels, is 8.5 millimetres more accurate on EMDB but does not run on a phone's AI chip and needs 416 milliseconds per person on a desktop GPU.

The timing leaves out person detection: the demo's detector needs about 27 milliseconds a frame on a desktop GPU. Four of the five models are research-only, because some training photos allow only non-commercial use. The one cleared for products lands 72.2 millimetres off on EMDB, against 48.8. The paper, posted November 6, tested only Android phones.

Read More: FreeMoCap turns two or more ordinary webcams into a motion capture rig, and SOMA Retargeter turns recorded human motion into joint commands for humanoid robots

Sources:

- InstantHMR paper, abstract (HAL)
- InstantHMR paper, full text (HAL, PDF)
- InstantHMR code, speed and accuracy tables (GitHub)
- InstantHMR model card (Hugging Face)
- InstantHMR paper, abstract (arXiv)

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