Possible collaboration with extreme robotics

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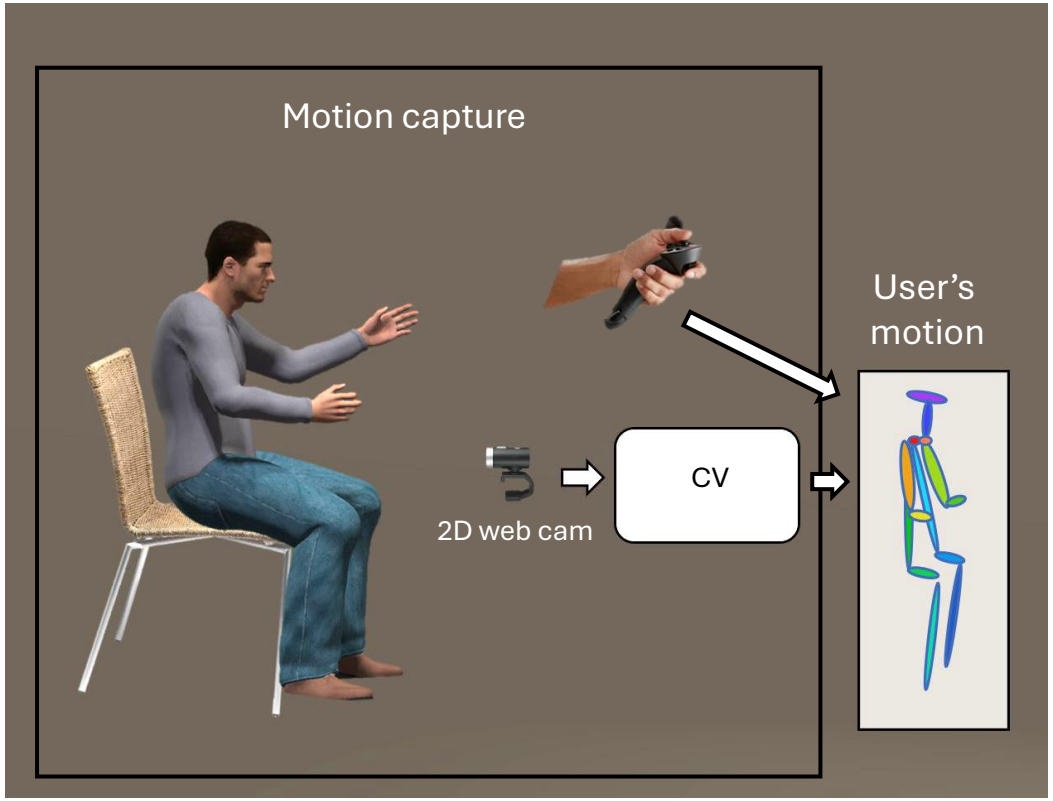
State of the art – Cool Moves

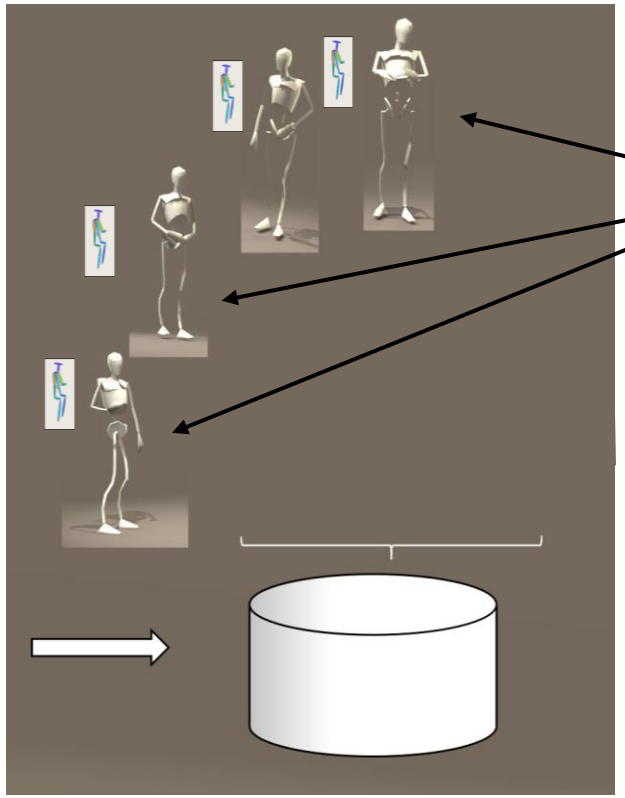
Cool Moves: User Motion Accentuation in Virtual Reality, Ahuja et. Al, UBICOMP ‘21



Capture of human motion is limited (e.g. tracking two palms and head for VR, noisy depth coordinates when using 2D camera pose recovery, etc.

Cool moves

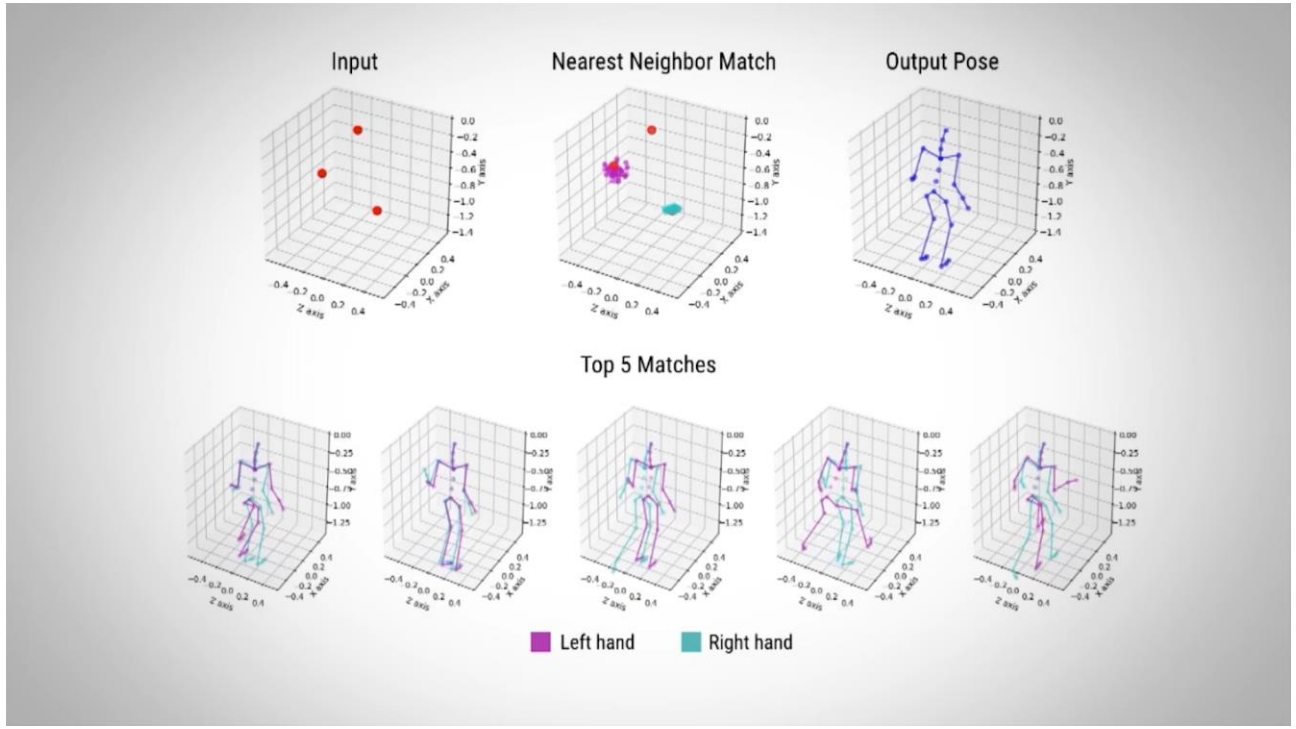
The system build a transformation from input partial representation to corresponding full body, stylized motion.



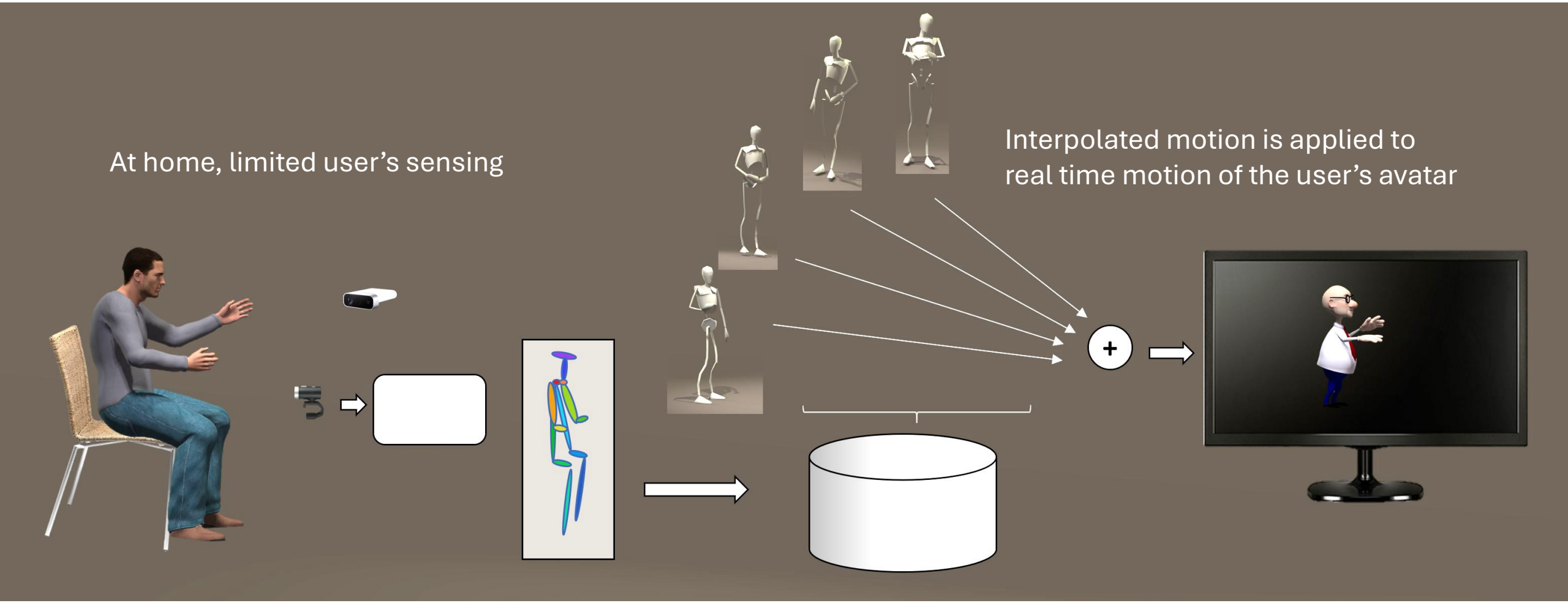
A full body motion capture motion taken from a professional, along with a corresponding ‘sensed’ version of the motion.

Cool moves

When a user motion is sensed (partial, noisy) – it is matched to nearest motions in the data set, and a new full body motion is generated using the base of recorded full body motions.



The Cool Moves pipeline



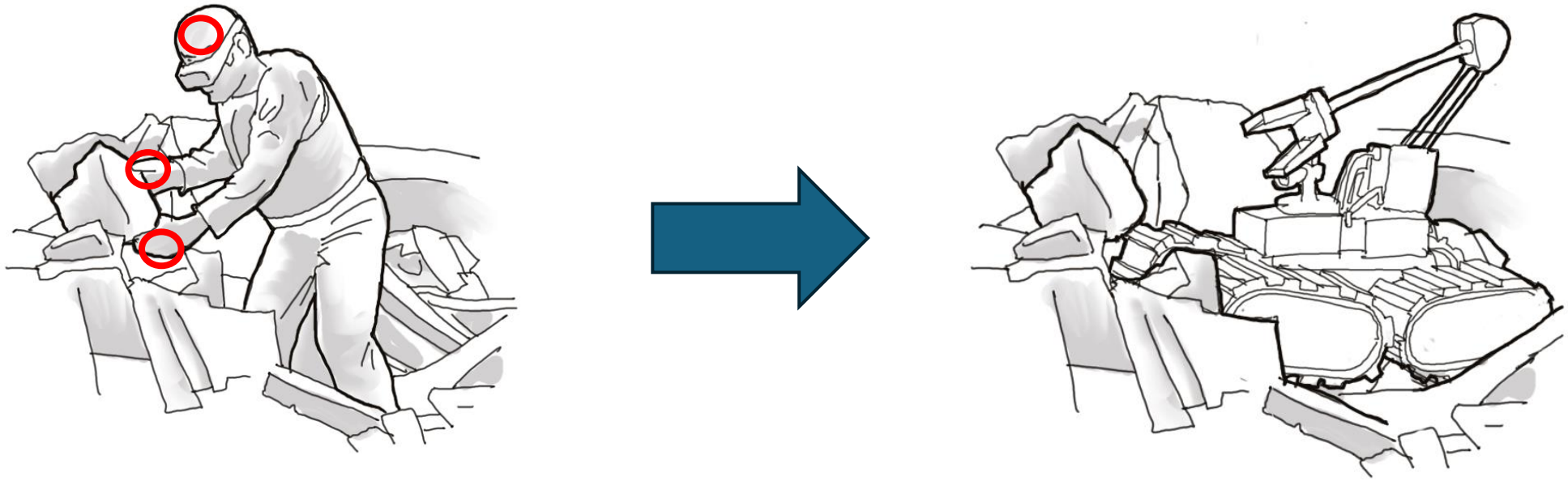
Smooth Moves generate a motion that fits the application context

Motion stylization

New research suggestion

A VR user is positioned in a danger zone. She uses natural motions to address the situation.

Using motion transformation dataset – transfer the human actions to action of one or more robots.



Possible Steps

- Select robots
- Records their actions, doing typical actions: (‘go north’, ‘go west’, ‘pick up object’, ‘put down object’ etc.).
- Record corresponding human actions of same semantics.
- Generate motion transformation.
- Generating simulations of robots follows human guidance.
- Examining display of robots to human and closing control loop.
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- Use real robots.

Special case

- Focus on human palm motions and dexterity:
- Transform motion to robot actuator.
- Transform haptic sensed by robot to the human palms.