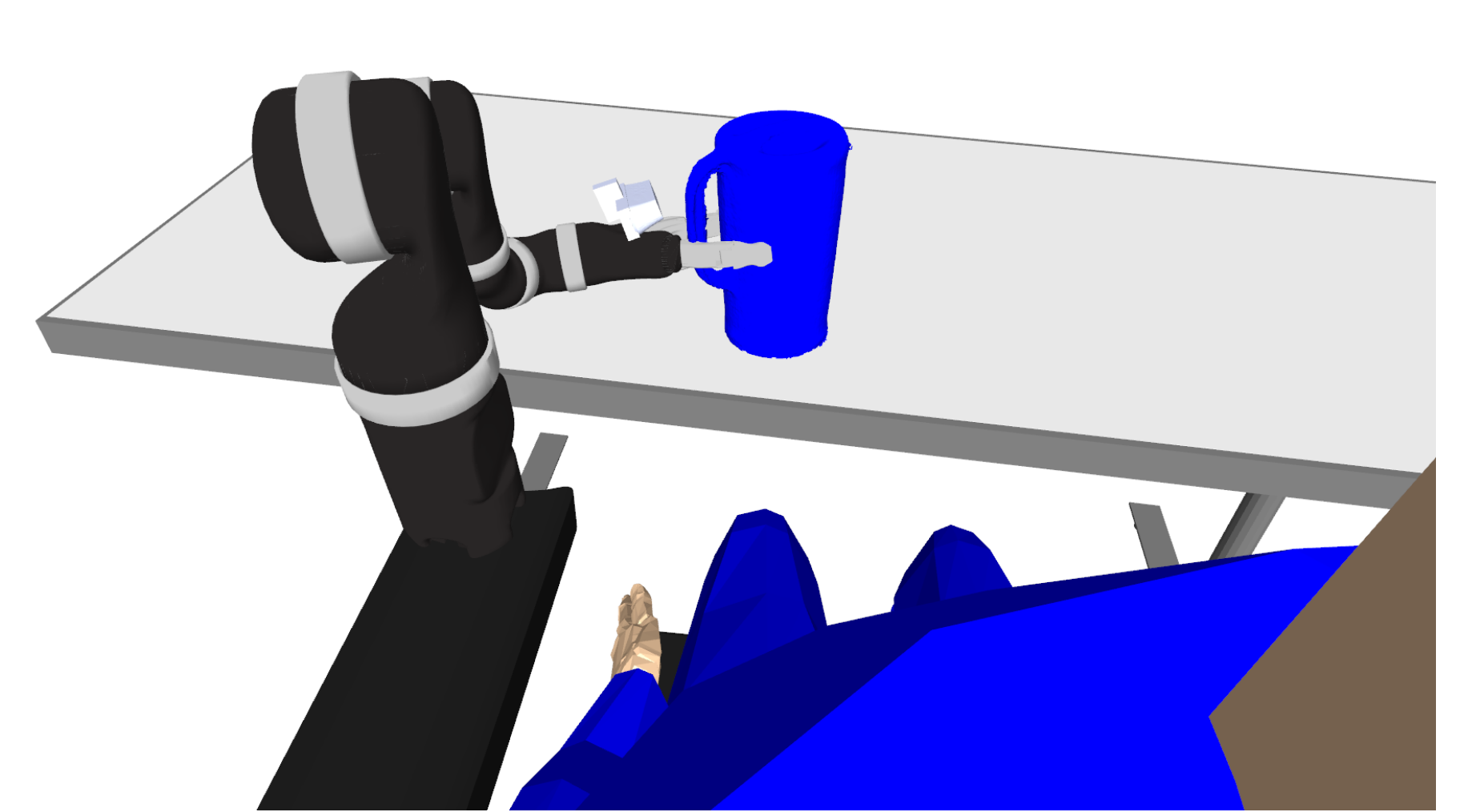
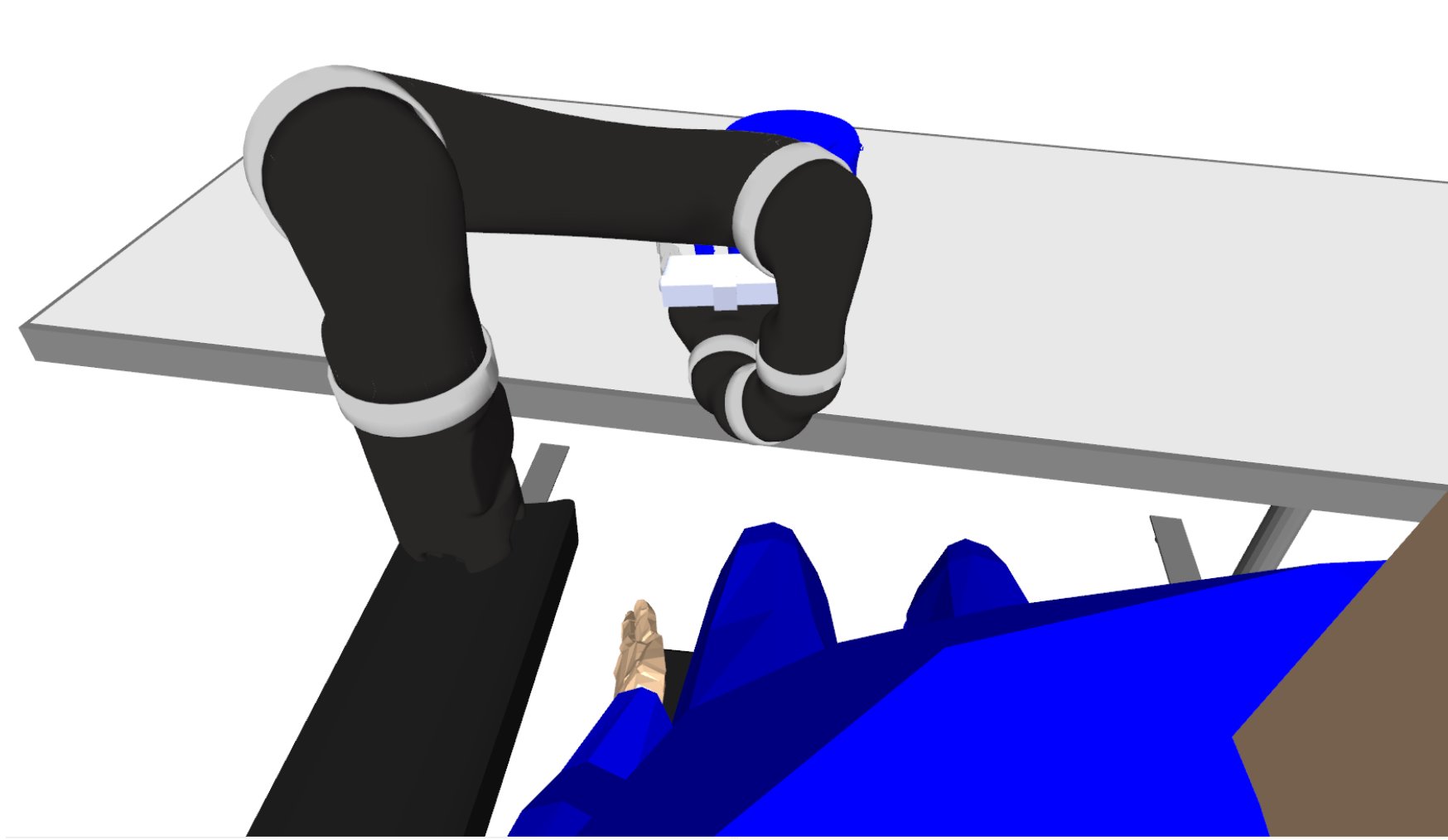
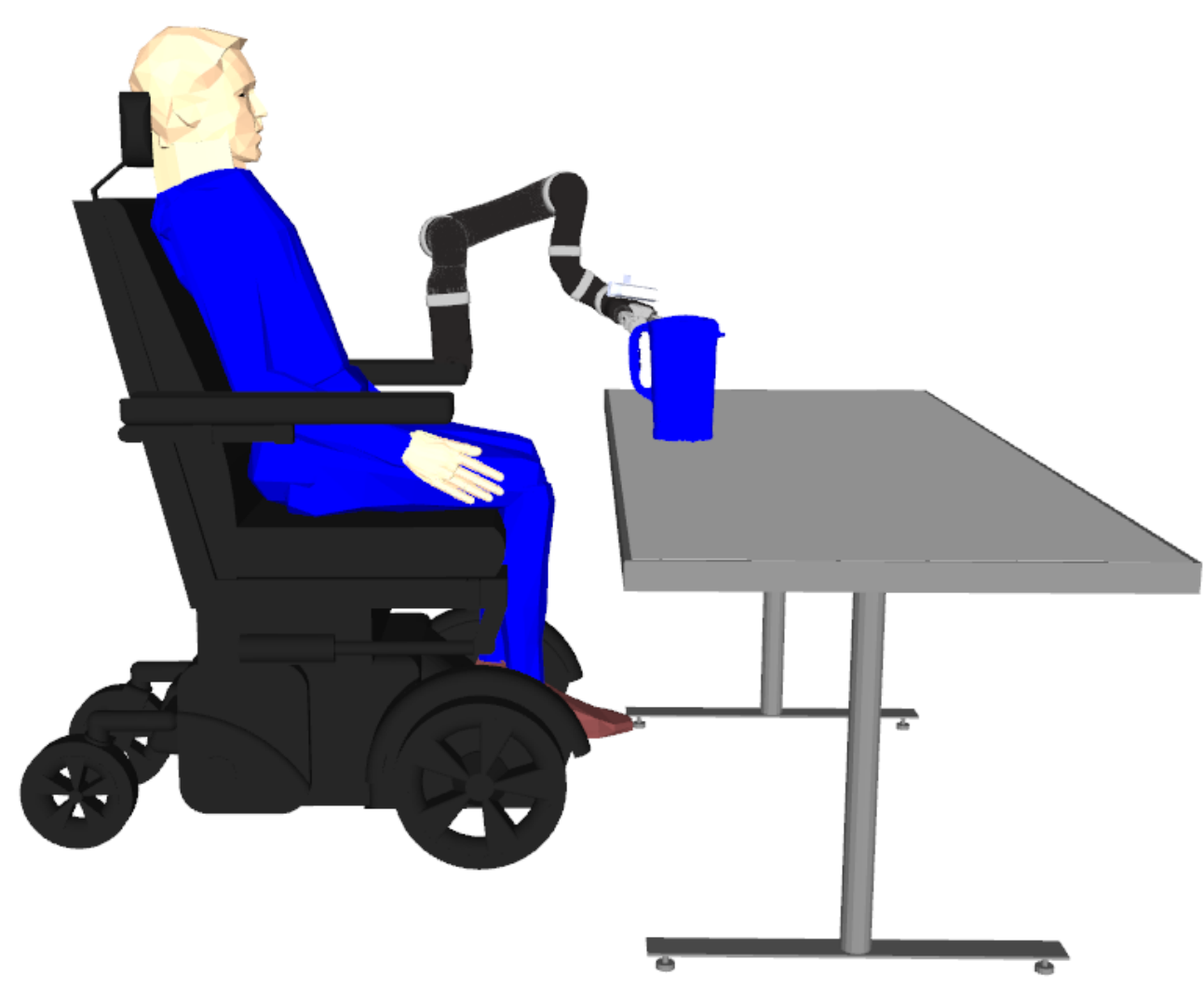
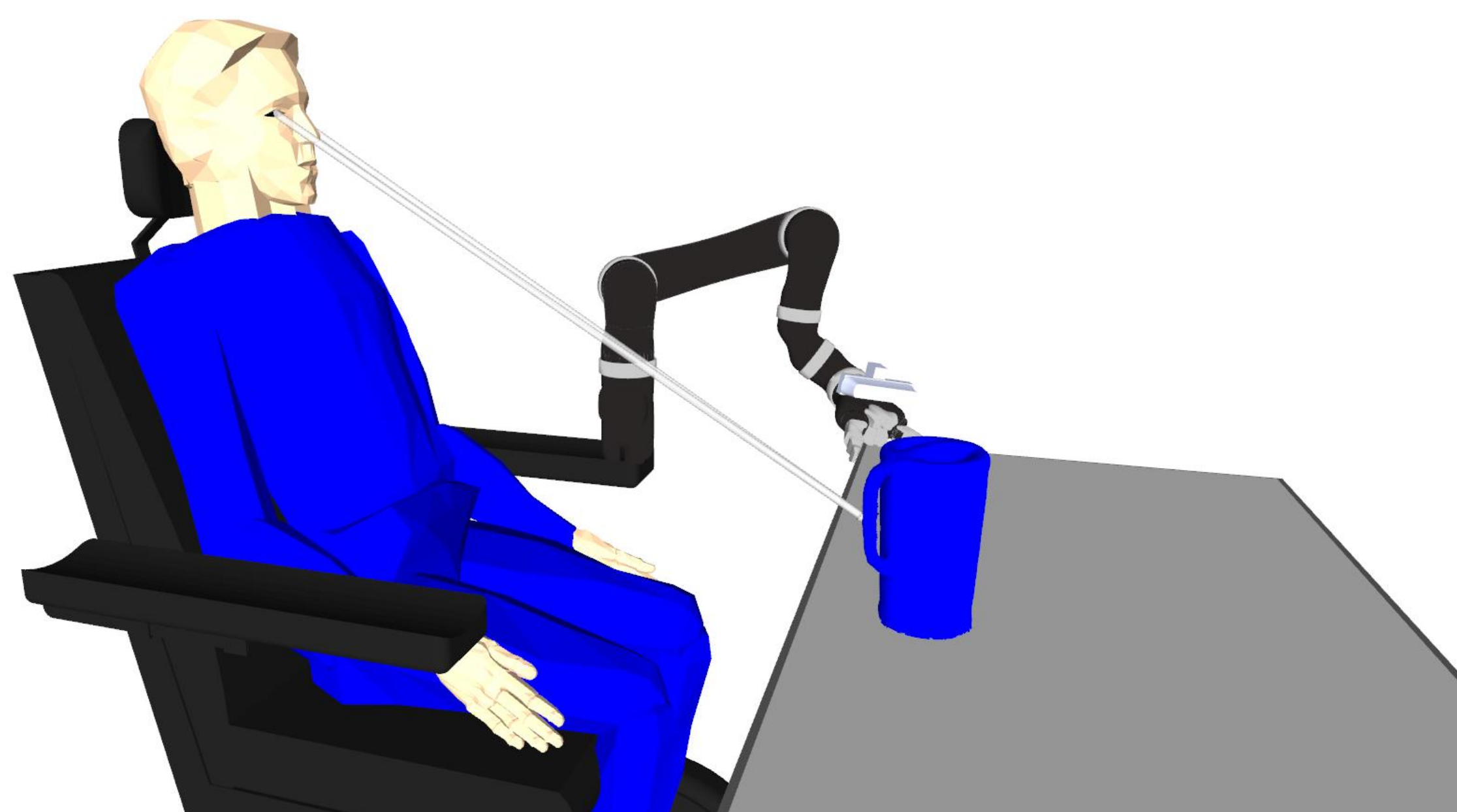
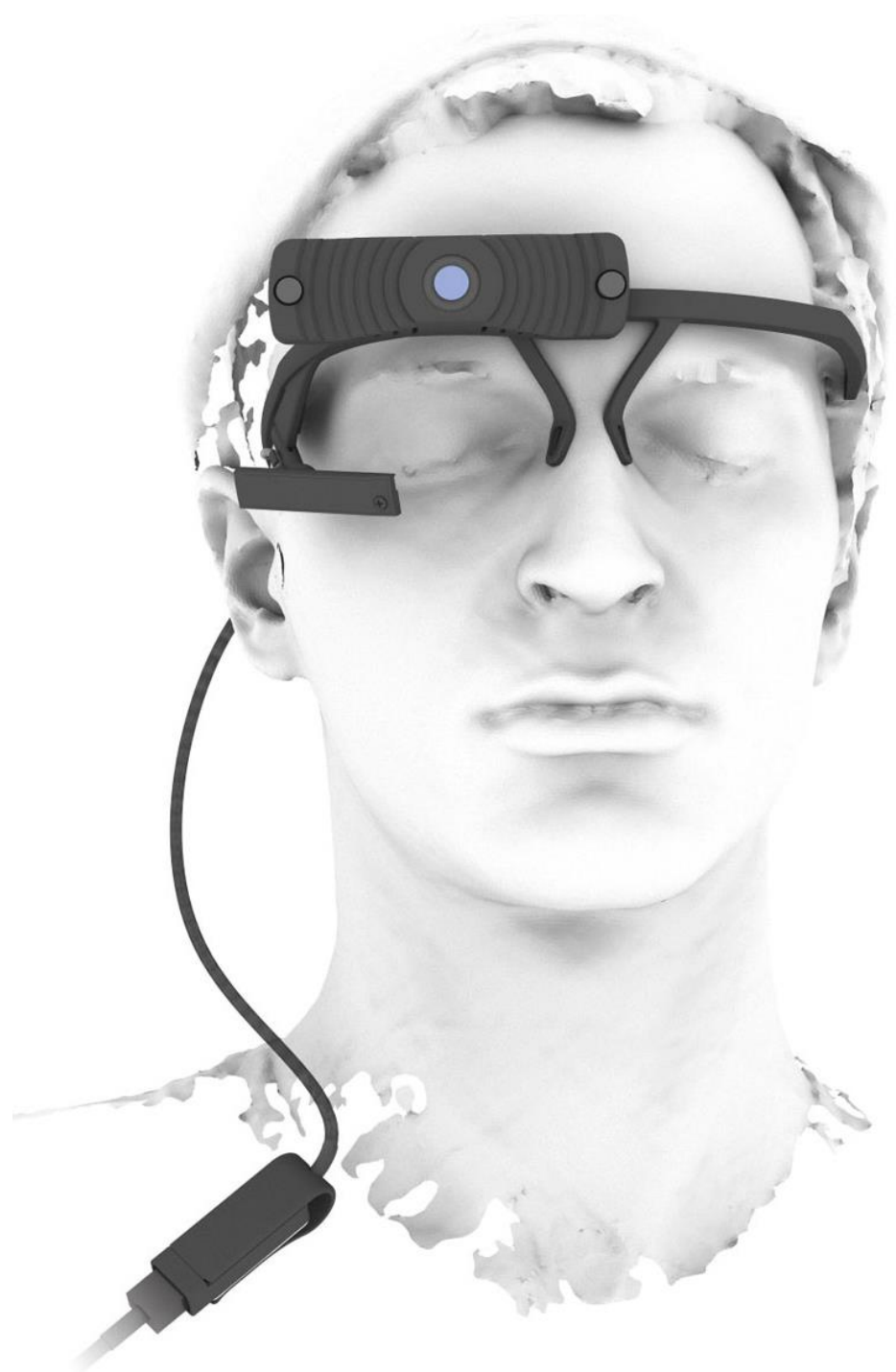


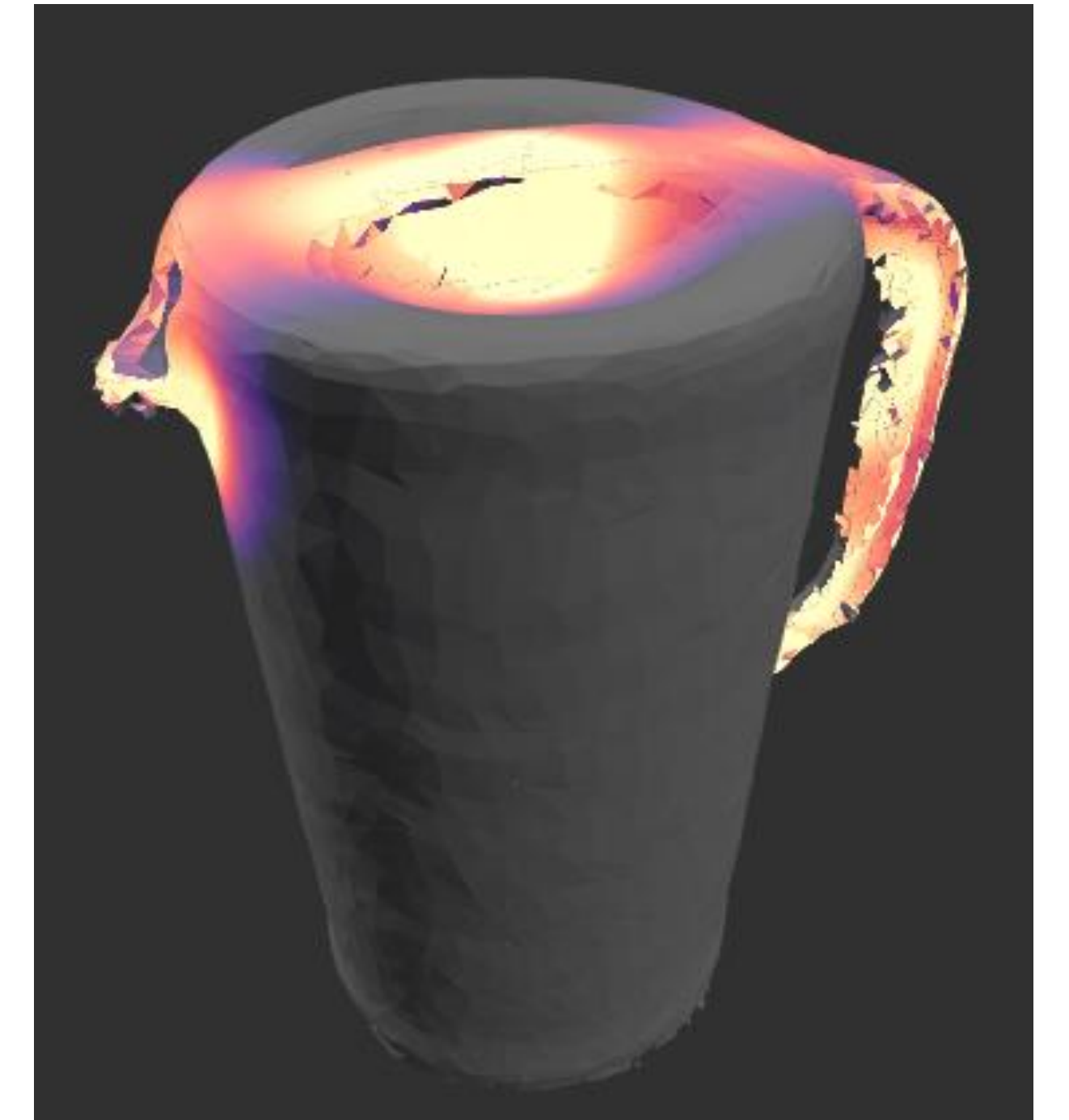
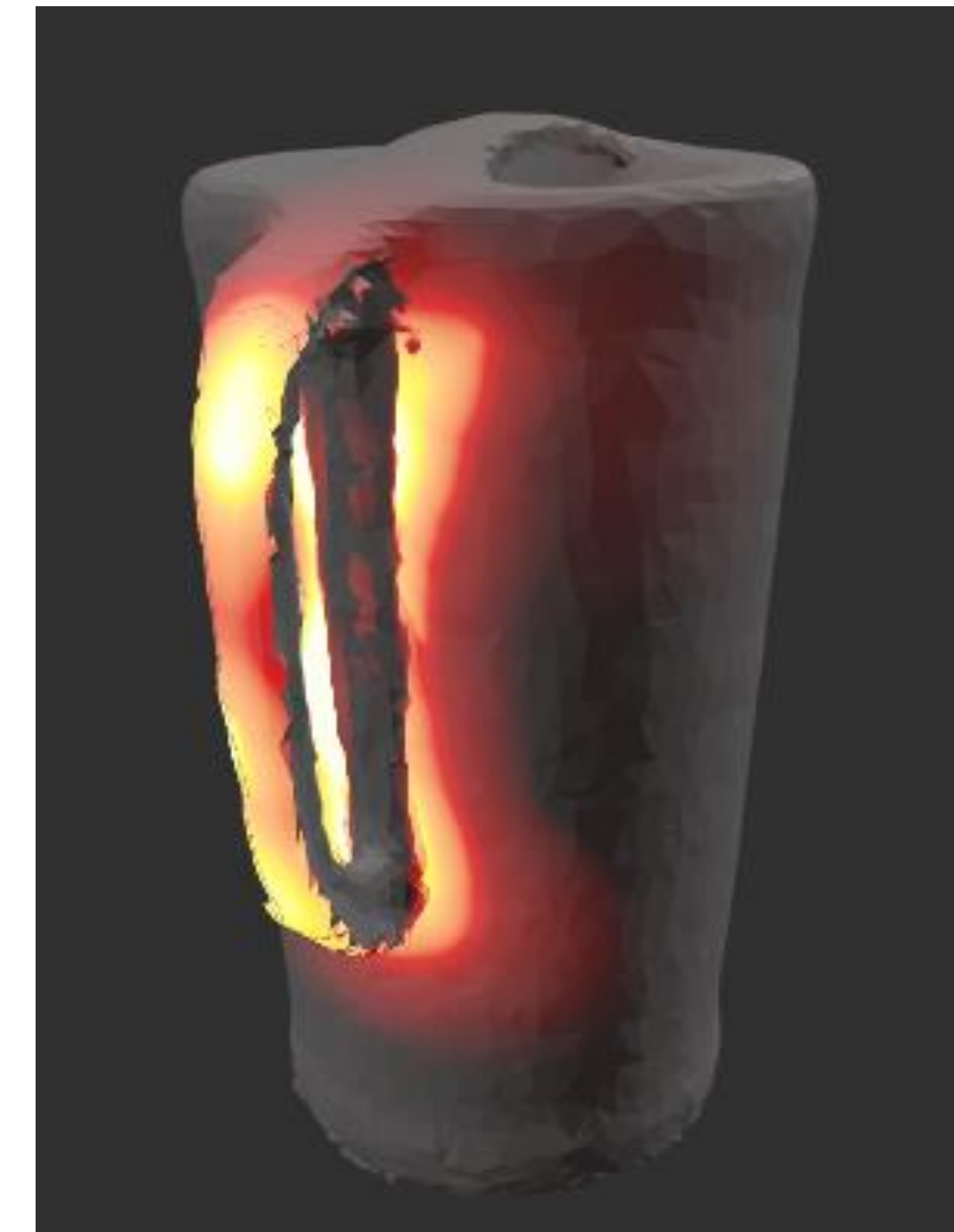
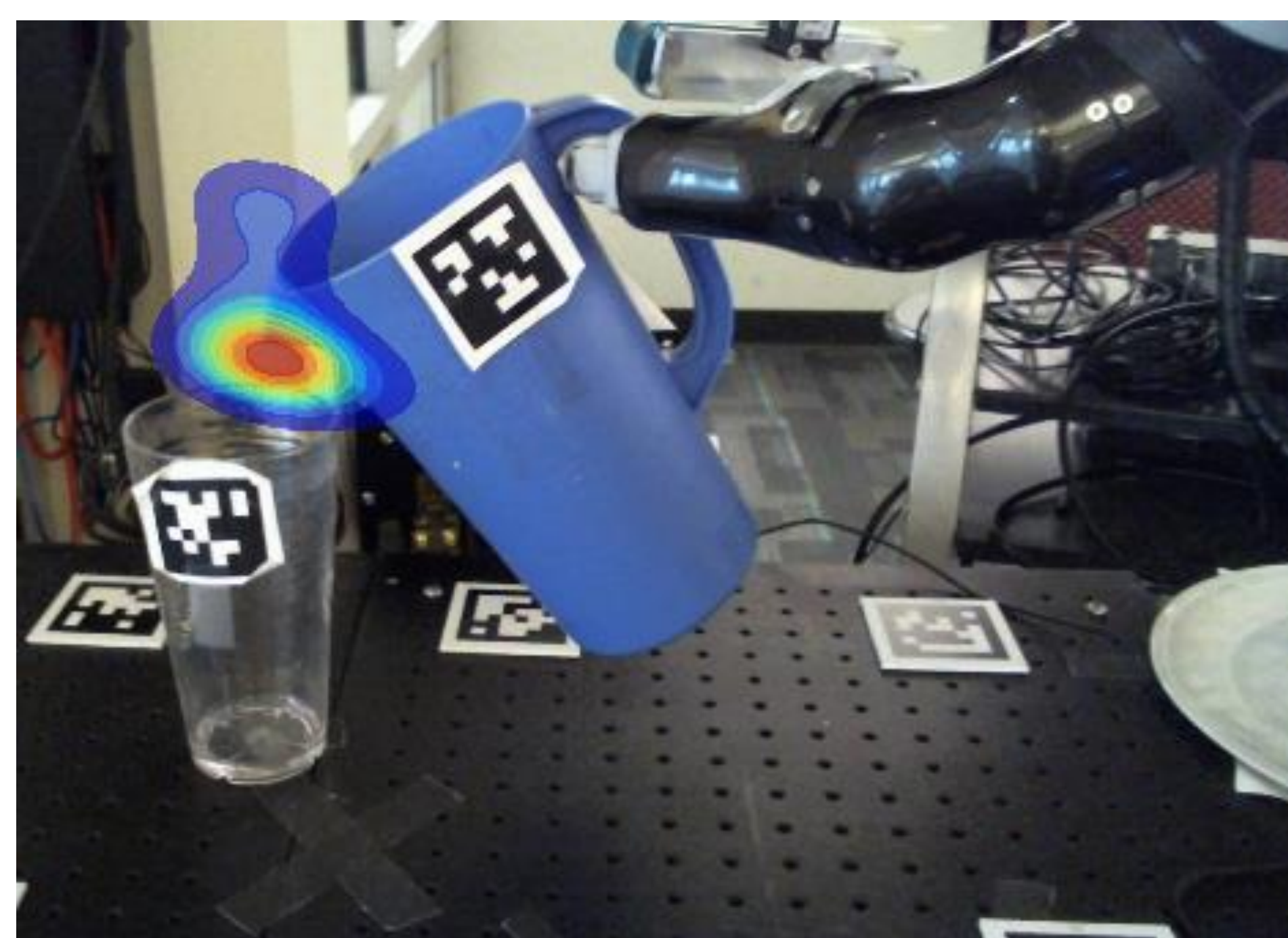
Prioritize Visibility to Improve Robotic Arm Usability in Manipulation Tasks



Gather Gaze Data to learn Object's Spatio-Temporal Saliency



Utilize Gaze Data to Weight Object's Saliency Features



Formalizing Maximizing Visibility as Trajectory Optimization

Trajectory	$\xi : [0, 1] \rightarrow \mathcal{Q}$
Projector	$P(\xi(t))$
Imager	$I(q, E)$
Saliency Features	$f \equiv (I_f, \xi_t)$
Feature Trajectory	$\xi_f : [0, 1] \rightarrow \mathbb{R}^3$
Feature Visibility	$I_f : [0, 1] \rightarrow [0, 1]$

$$o(f, t) = \begin{cases} 0 & \text{if } I_f(t) = 0 \\ 1 & \text{if } I_f(t) = 1 \text{ and } P(\xi_f(t)) \notin I(\xi(t), E) \\ 1 & \text{if } I_f(t) = 1 \text{ and } P(\xi_f(t)) \in I(\xi(t), E) \end{cases}$$

$$o(\xi) = \sum_f \int_0^1 o(f, t) dt$$

Objective Function: $\xi^* = \arg \min_{\xi \in \mathcal{E}} o(\xi)$