

Hints

Homogeneous Transformations

Task 1. Determination of the homogeneous transformation according to the “Look-At” specification

$$\underline{y}_{eye} = \frac{\underline{p}_{ref} - \underline{p}_{eye}}{|\underline{p}_{ref} - \underline{p}_{eye}|}$$

$$\underline{x}_{eye} = \frac{\underline{y}_{eye} \times \underline{z}_{World}}{|\underline{y}_{eye} \times \underline{z}_{World}|}$$

$$\underline{z}_{eye} = \frac{\underline{x}_{eye} \times \underline{y}_{eye}}{|\underline{x}_{eye} \times \underline{y}_{eye}|}$$

Task 2. Determination of a homogeneous transformation for stereo views

$${}^{eye_l}T_{eye_r} = \underline{Rot}(\underline{z}_l, \alpha) \cdot \underline{Trans}(\underline{x}_l, d) \cdot \underline{Rot}(\underline{z}_r, \alpha)$$