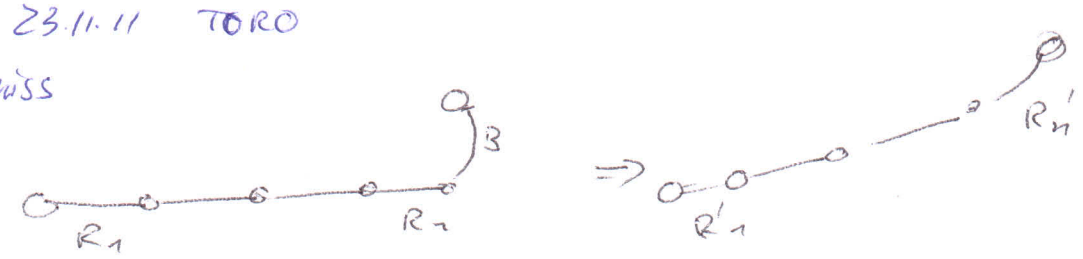
Robotics II 23.11.11 TORO

Cyrill Stachniss



$R_1 \dots R_n B = R_1' \dots R_n'$; R_k relative rotations

$\Rightarrow$ Goal: Find $R_1' \dots R_n'$

* let the first node be the Ref. frame

- we want one rotation axis for the correction

$\Rightarrow$ $A_n' = A_n B = Q A_n$ with A_n being the rotation in the global frame

$R_{1:n}'$ $R_{1:n}$

$Q := Q_1 \dots Q_n$

$Q_k = \text{slerp}(Q_1, u_{k-1})^T \, \text{slerp}(Q_1, u_k)$ $u_k \in [0,1]$

$R_k' = [A_{k-1}']^T A_k'$ $A_k' = Q_1 \dots Q_k A_k'$

$= [Q_{1:k-1} A_{k-1}]^T A_k'$

$= A_{k-1}^T Q_{k-1}^T \dots Q_1^T A_k'$

$= A_{k-1}^T Q_{k-1} \dots Q_1^T [Q_1 \dots Q_k A_k]$

$= A_{k-1}^T Q_k A_k$

$= (R_{1:k-1})^T Q_k R_{1:k}$