Robot's current motion ξ_{θ_k}

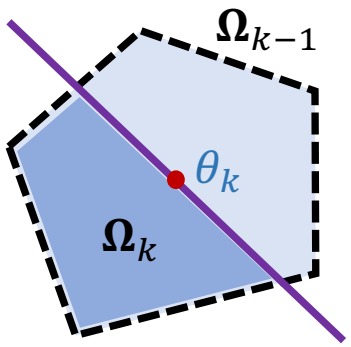
Cost function parameters $\theta_k \rightarrow \theta_{k+1}$

ξ_{θ_k} a_k

Not Satisfactory

Directional correction $\boldsymbol{a_k}$ to ξ_{θ_k}

(magnitude $\|\boldsymbol{a_k}\|$ does not matter)



Update search space
$\boldsymbol{\Omega}_{k-1} \rightarrow \boldsymbol{\Omega}_k$

Choose a guess
$\theta_k \in \boldsymbol{\Omega}_{k-1}$

Robot motion planner with current cost function $J(\theta_k)$

Trajectory ξ_{θ_k}

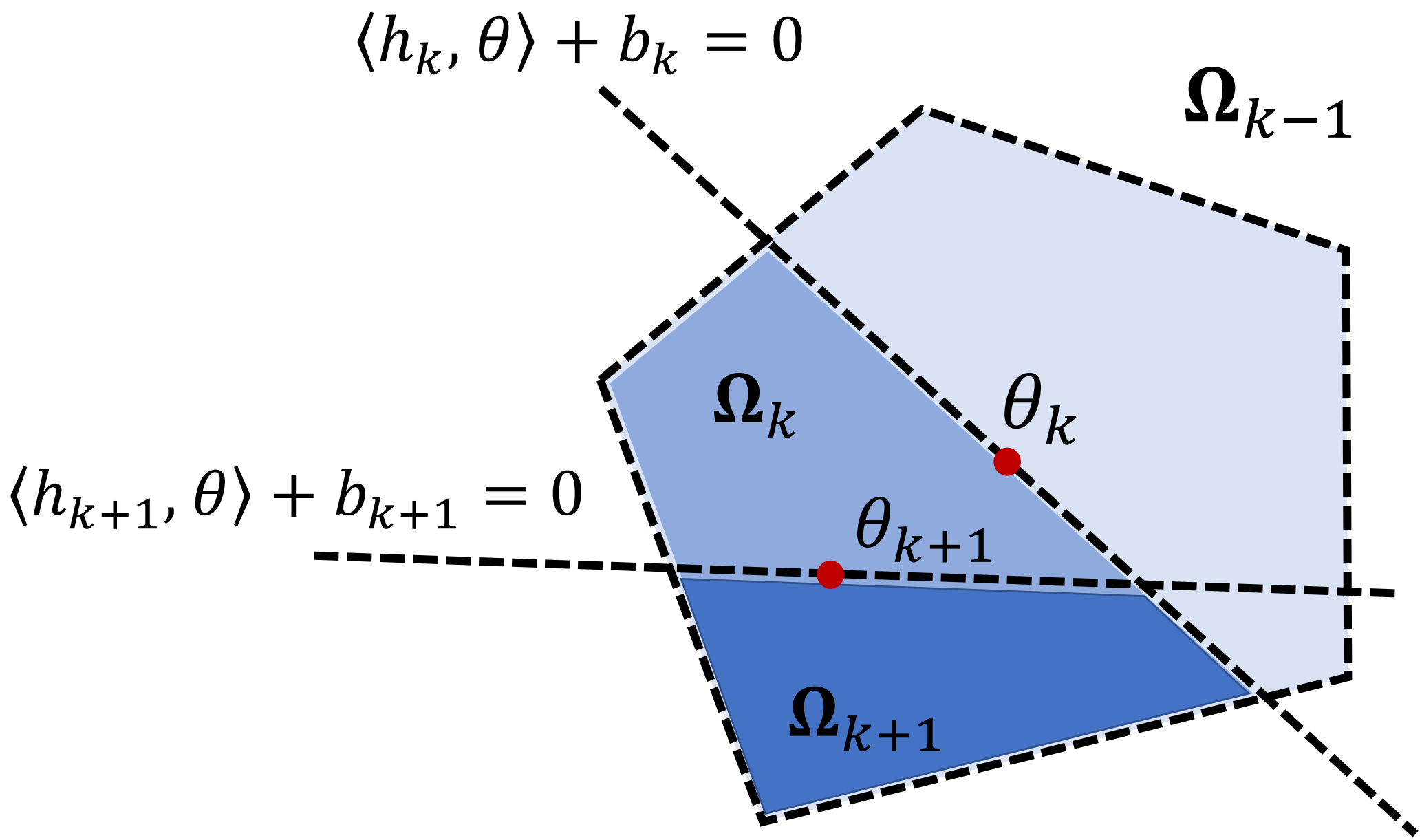
While robot executes the planned trajectory ξ_{θ_k}

human applies directional correction $\boldsymbol{a}_k$

$\boldsymbol{a}_k$
ξ_{θ_k}

Computing the cutting hyperplane:
$\langle h_k, \theta \rangle + b_k = 0$

$\langle h_k, \theta \rangle + b_k = 0$


$\langle h_k, \theta \rangle + b_k = 0$
$\mathbf{\Omega}_{k-1}$
$\mathbf{\Omega}_k$
θ_k
$\langle h_{k+1}, \theta \rangle + b_{k+1} = 0$
θ_{k+1}
$\mathbf{\Omega}_{k+1}$