A. Problem identification (interviews, observations, experiences)

Feedback from trainers | Observation | Walking w/ a guide dog

B. System development (quiet and stable walking control)
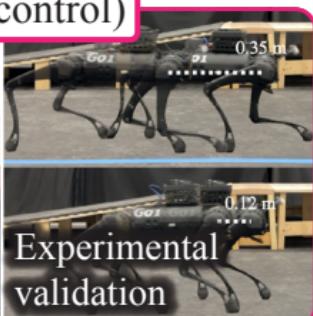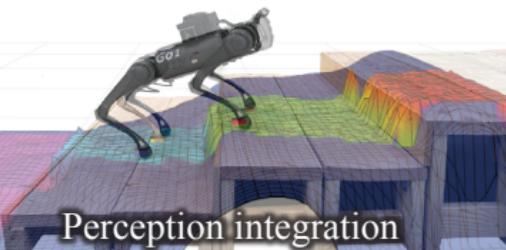
$$\boldsymbol{R}_k^{err} = \boldsymbol{R}_k \cdot \boldsymbol{R}_k$$

$$R_{err}(\mathbf{R}_k, \mathbf{R}_k^{ref}) = \left(\frac{1}{2}(\boldsymbol{R}_k^{ref})\right)$$

$$\boldsymbol{R}_{k+1} = \boldsymbol{R}_k (I + [\boldsymbol{\omega}_k]\triangle t + \frac{1}{2!}$$

$$\min_{\mathbf{d}_i} \quad \frac{1}{2} \mathbf{d}_i^T \nabla_z^2 C(\mathbf{z}_i, \boldsymbol{\theta}) \, \mathbf{d}_i +$$

New MPC formulation | Perception integration | Experimental validation

0.35 m

0.12 m

C. Evaluation (user feedback)

Dog guiding | Robot guiding