

Generate a set of images depicting the same fox in different scenarios...

## Flow-Matching Generative Model

### Resolution-decoupled Sampling



⋮



### Reward Functions

$R^1$

$R^2$

⋮

$R^K$

### Multi-rewards

$r_1^1, r_2^1, \dots, r_G^1$

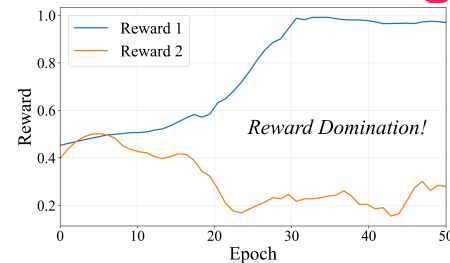
$r_1^2, r_2^2, \dots, r_G^2$

⋮

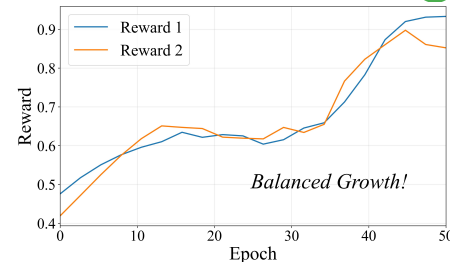
$r_1^K, r_2^K, \dots, r_G^K$

### Multi-rewards Aggregation

#### Naive Weighted Aggregation ❌



#### Log-tamed Aggregation ✅



Wow! Low-resolution images can drive effective RL!

### Policy Optimization

$$J_\theta = J_{clip} - \beta D_{KL}(\Pi | \Pi_{ref})$$

### Loss Computation

### Advantage Computation

$$A^1, A^2, \dots, A^G$$