

# Exploring Learning-based Control Policy for Fish-like Robot in Altered Background Flows

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## Motivation

### Previous Works

Mostly conducted in the stationary flow field, and achieve limited performance in non-stationary.

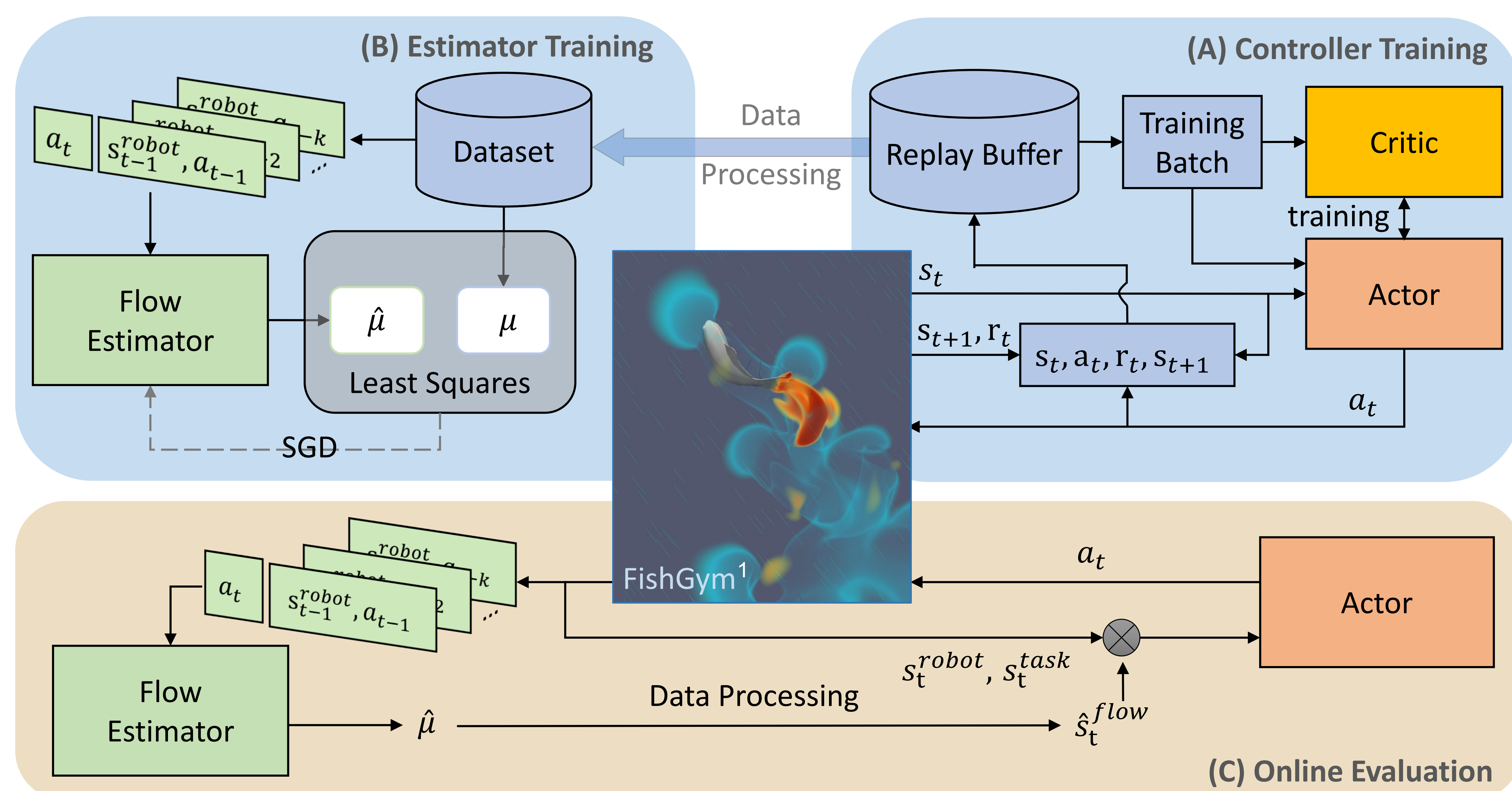
### Objective in this Work

Exploring learning-based control policy for fish-like robots in altered background flows.

Unknown Uniform Flow

How to swim efficiently in non-stationary flow field?

## Methodology



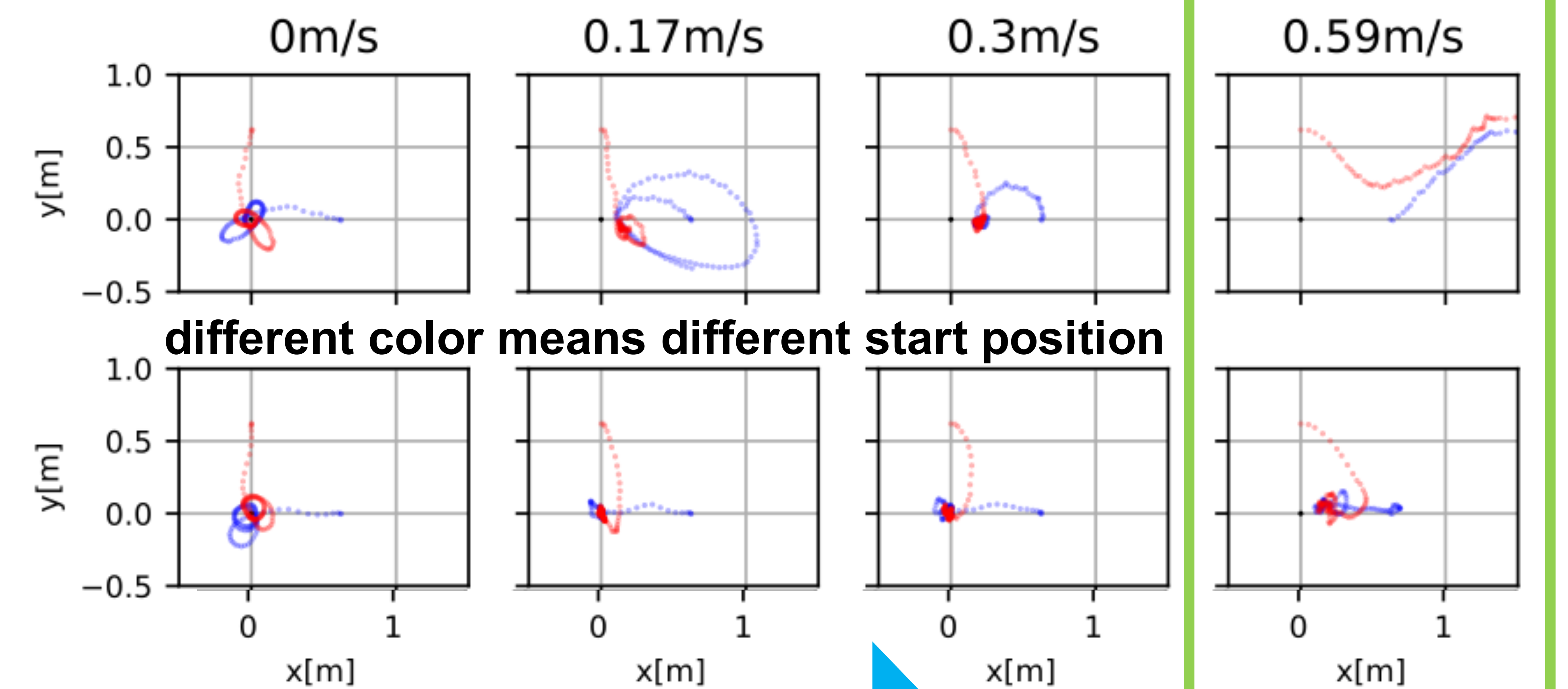
## Simulation Results

### Approaching Target and Stay Task

Unseen during Training

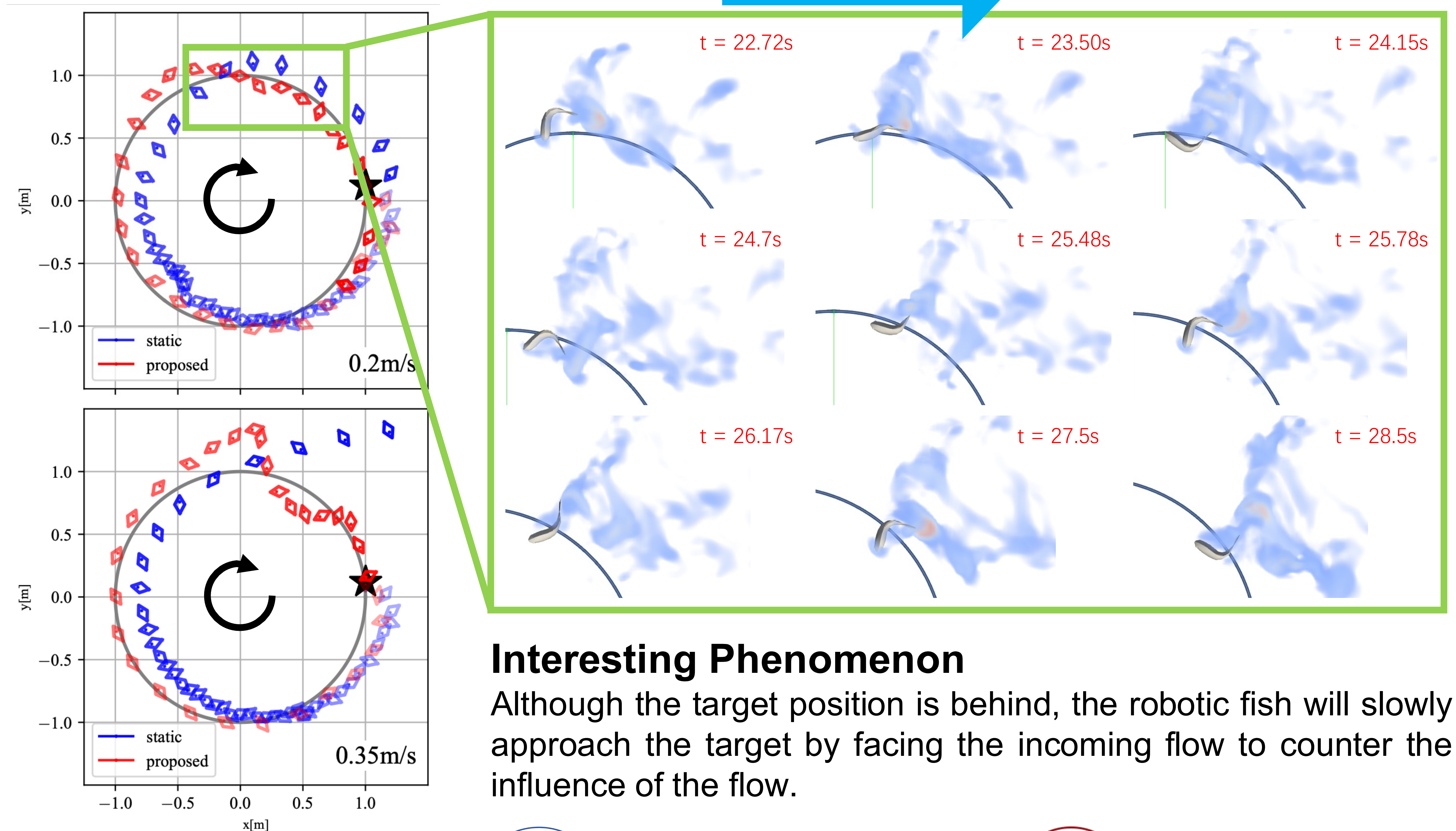
static policy  
 $\pi_{ATS}^s$

proposed policy  
 $\pi_{ATS}^o(\hat{\mu})$



### Path-Following Control Task

Background Flow



### Interesting Phenomenon

Although the target position is behind, the robotic fish will slowly approach the target by facing the incoming flow to counter the influence of the flow.