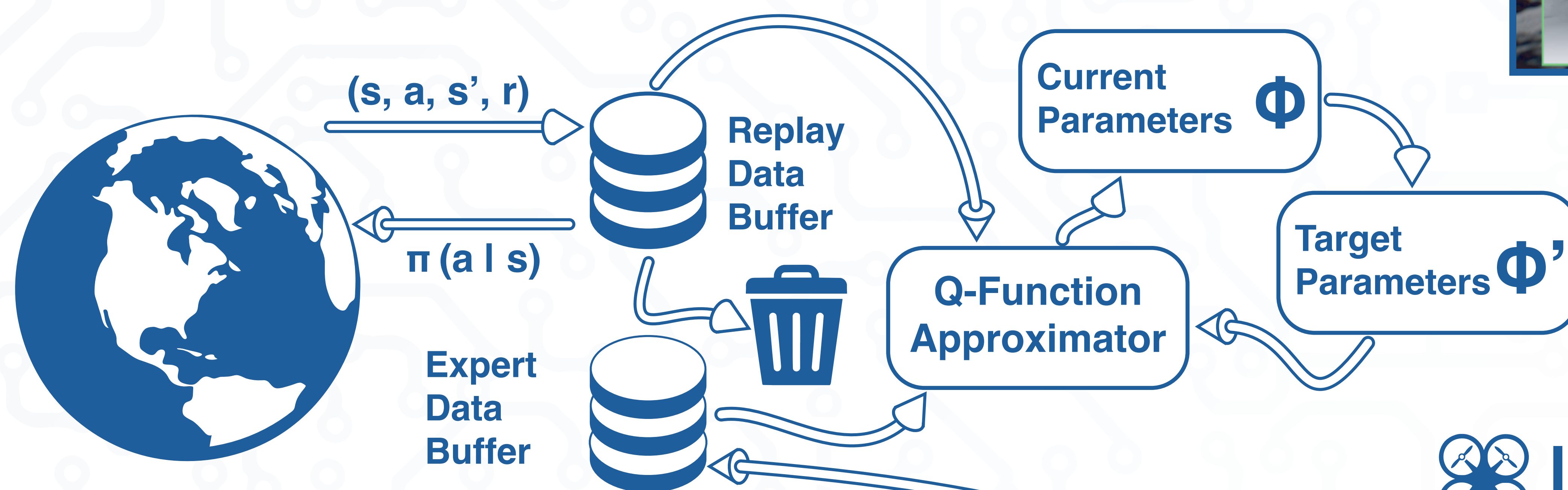# AIRSIM + DEEP RL

Shashank Agnihotri | José Arce | Rolf-David Bergdoll

UNI FREIBURG

Goal:
- Train a QuadCopter to follow a trajectory without crashing into obstacles using MS AirSim
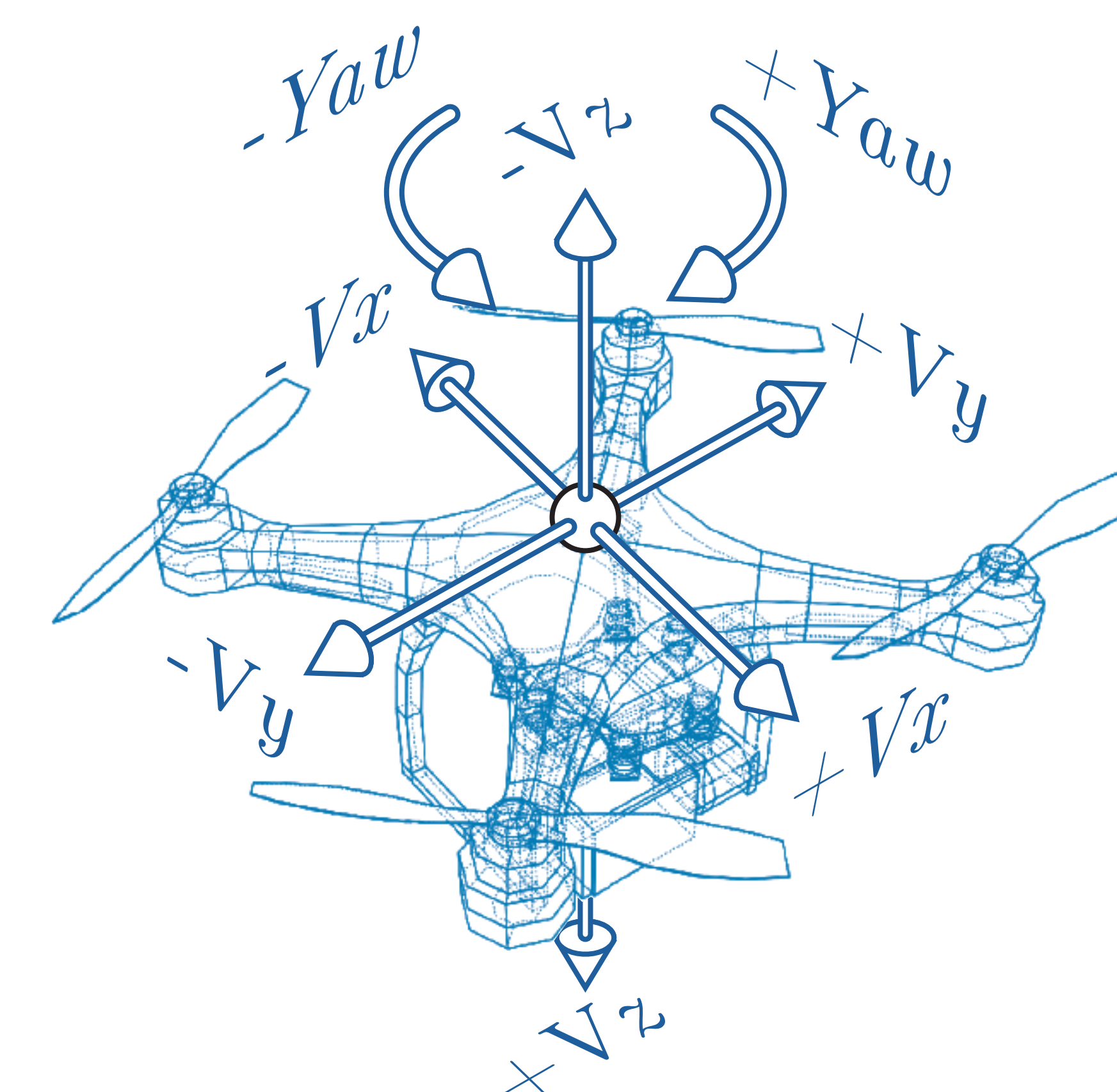
Algorithm: Double-Q Deep Learning

(s, a, s', r)
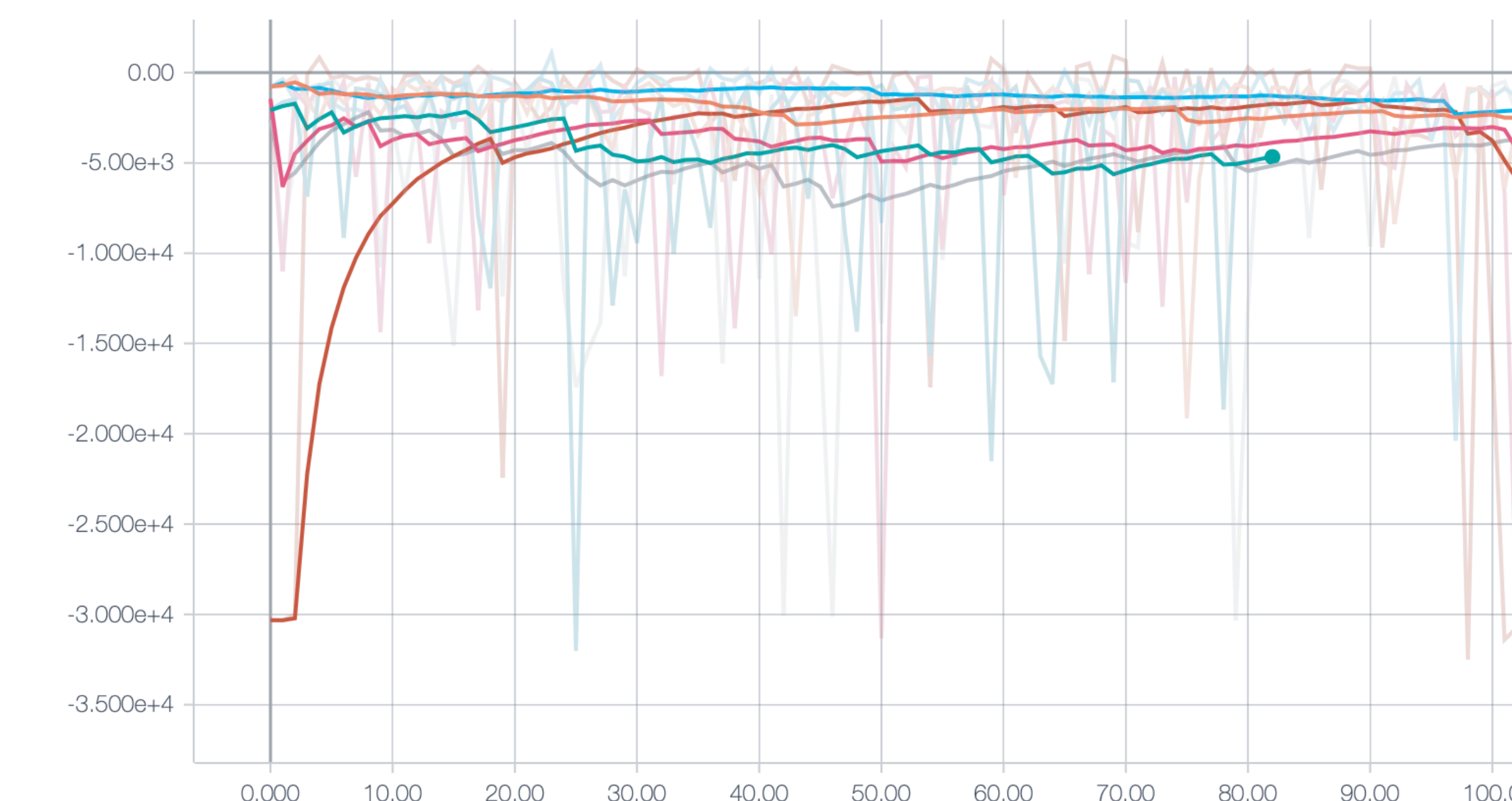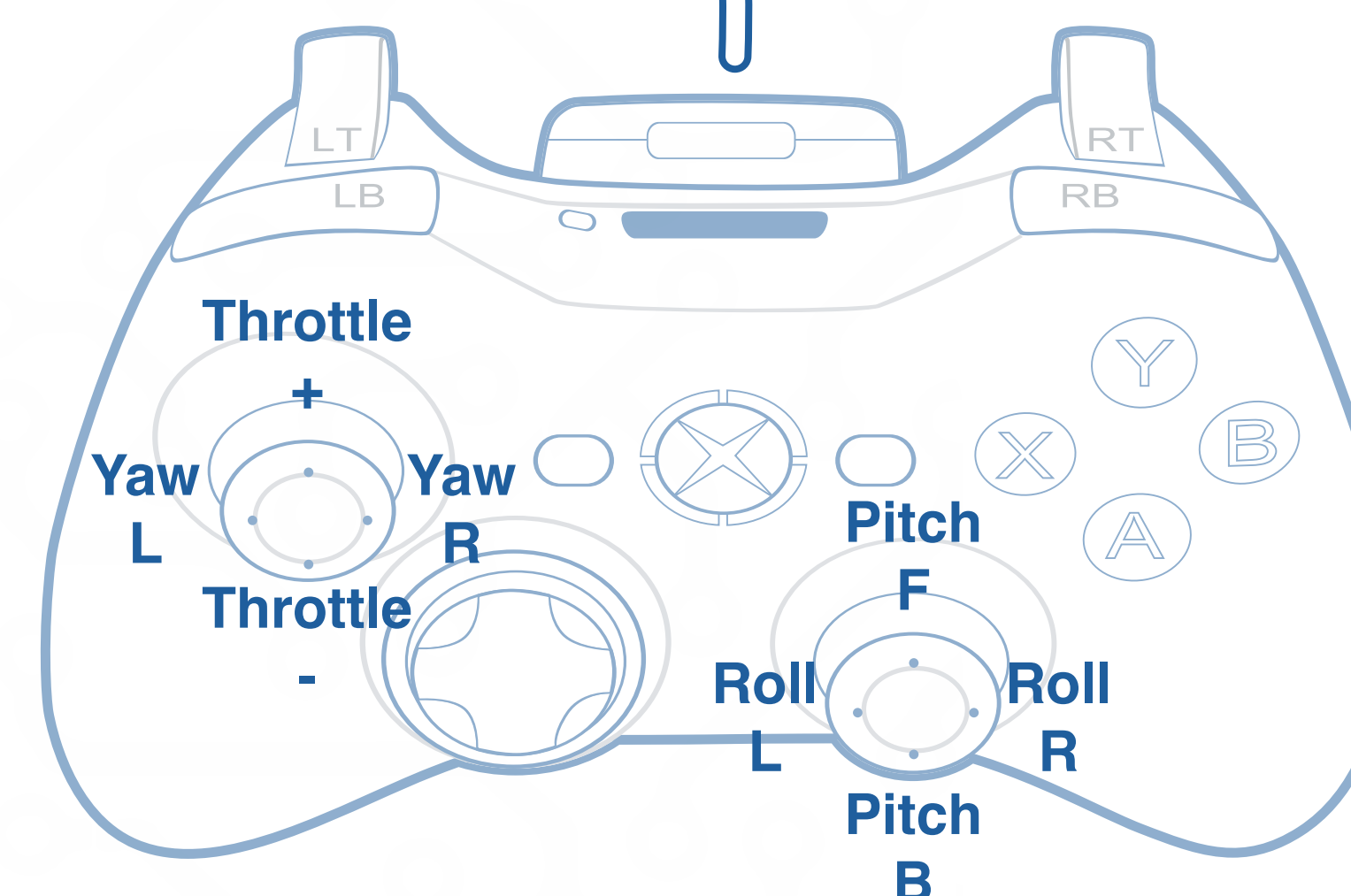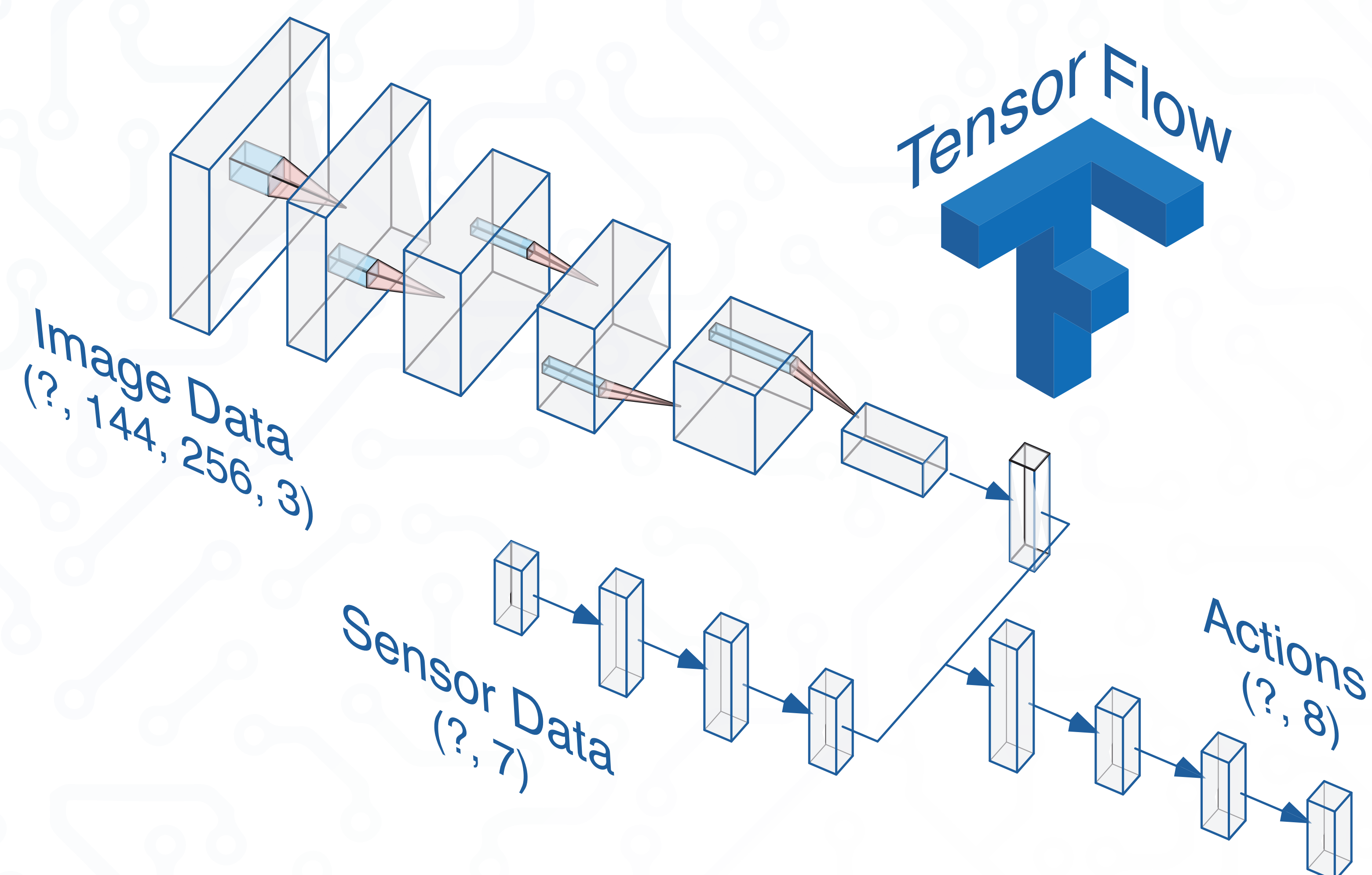
Replay Data Buffer

$\pi (a \mid s)$

Expert Data Buffer

Q-Function Approximator

Current Parameters Φ

Target Parameters Φ'

Model: KombiNet v1.0

Tensor Flow

Image Data
$(?, 144, 256, 3)$

Sensor Data
$(?, 7)$

Actions
$(?, 8)$

Environment:

UNREAL ENGINE

Imitation Learning

LT   RT
LB   RB

Throttle
+
Yaw   Yaw
L   R
Throttle
-

Y
X   B
A

Pitch
F
Roll   Roll
L   R
Pitch
B

Actions:

$-Yaw$ $+Yaw$
$-V_z$
$-V_x$ $+V_y$
$-V_y$ $+V_x$
$-V_z$

Learning

GitHub

`https://github.com/joseab10/AirSim_DeepRL`