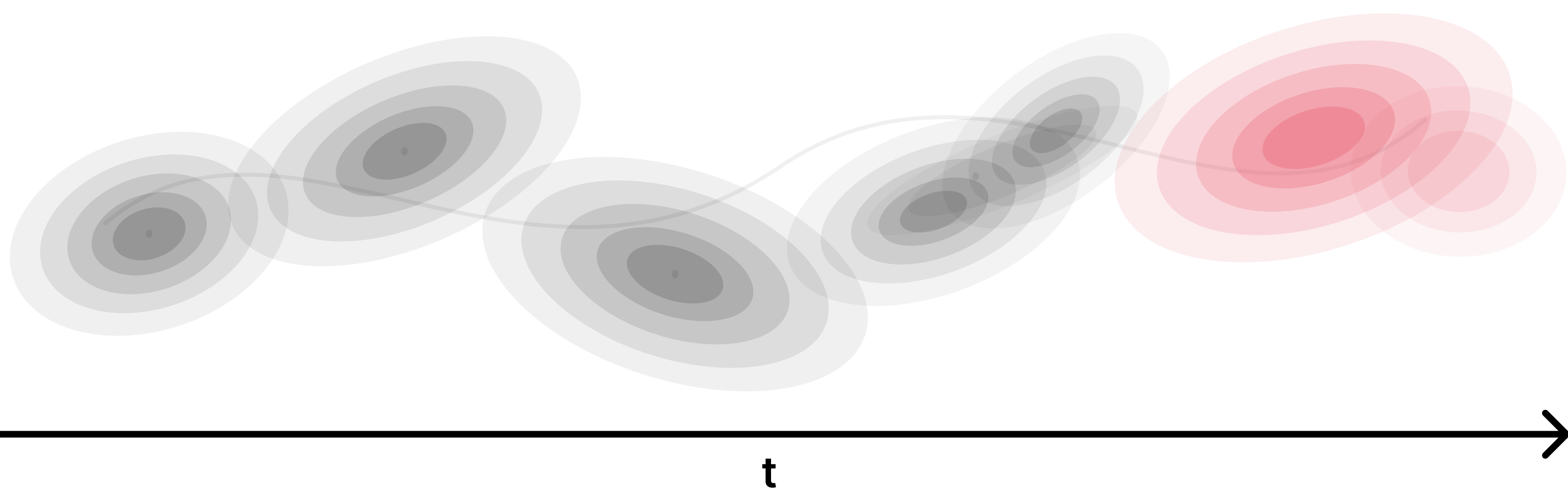


a.

World is not static.

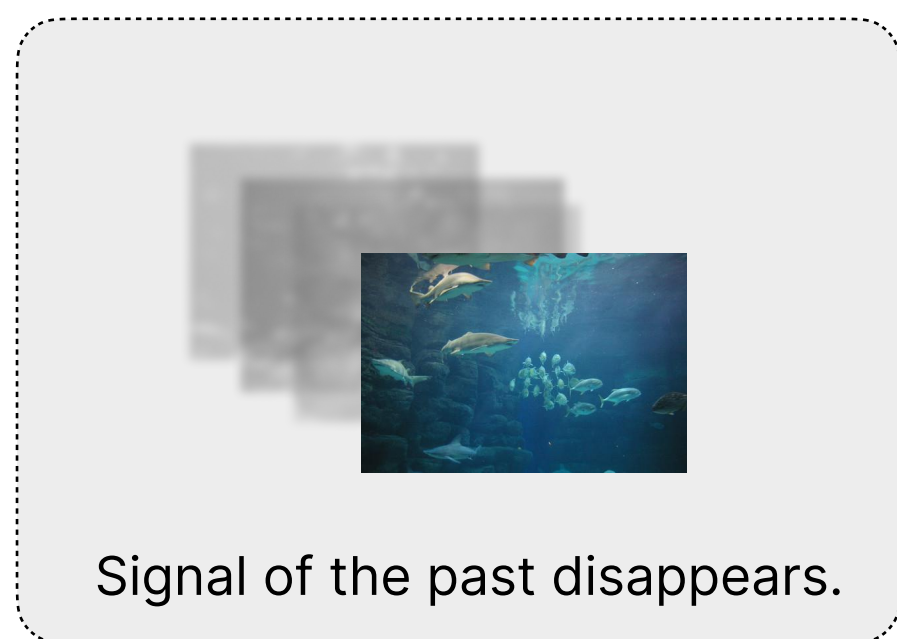
Continual Learning is a generalization of Empirical Risk Minimization



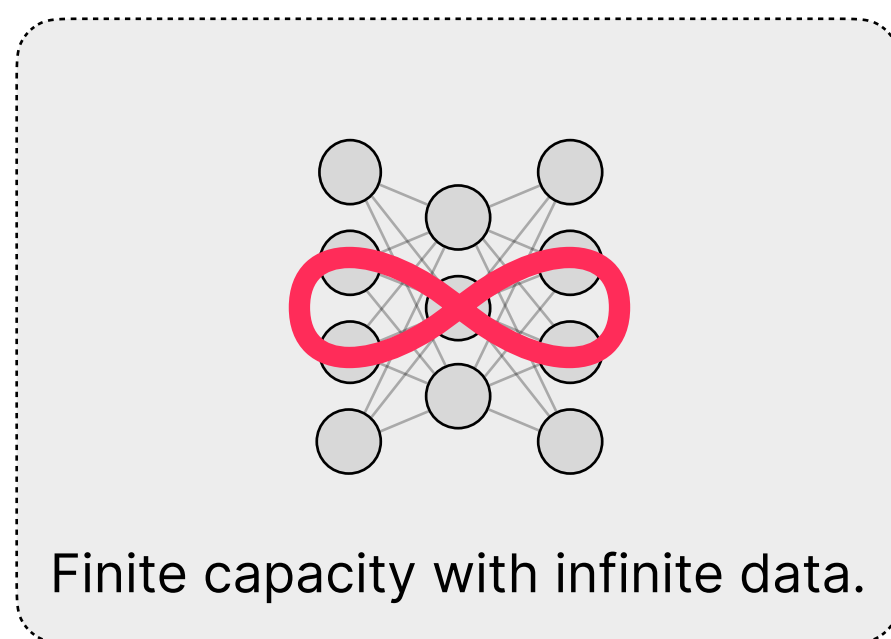
b.

Three Obstacles for Continual Learning:

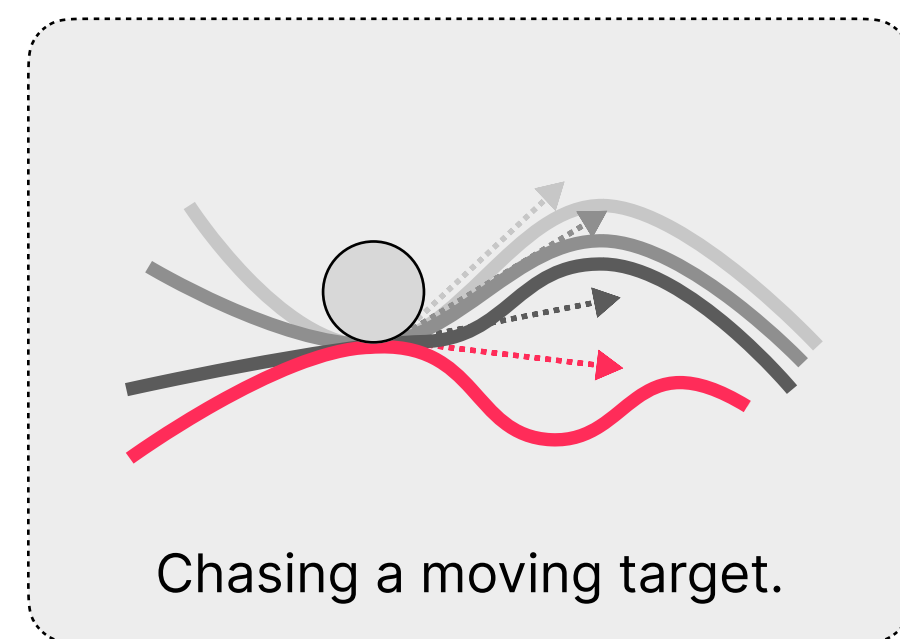
Information



Capacity

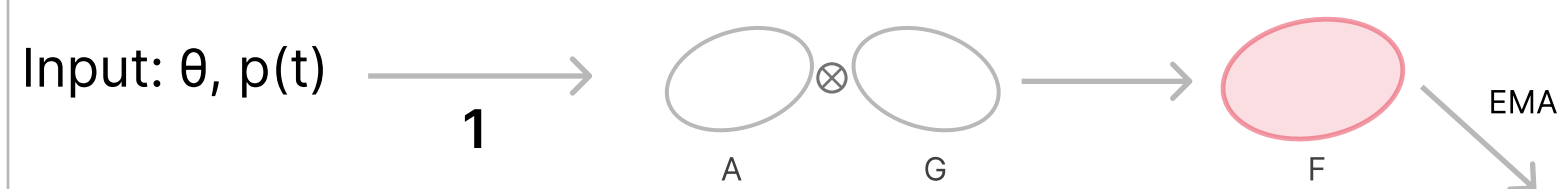


Non-stationary

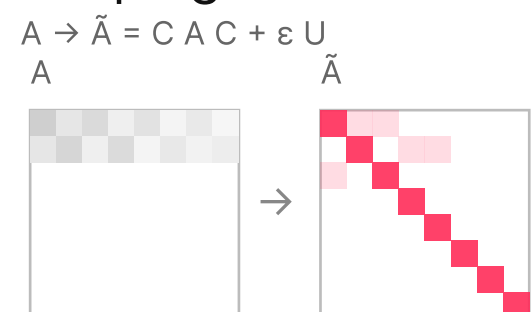


c. **Continual Learning as a Geometric Flow**

c1. EMA K-FAC Metric



3 Shaping the statistic



c2. Conceptor

$$c_i = \lambda_i / (\lambda_i + \alpha^{-2})$$

2 Provide λ from A

5 Change θ
Affect Next F

4 Provide ΔA

c3. Circulation

$$E = \|C^{\frac{1}{2}} \Delta A U^{\frac{1}{2}}\|_F^2 + \|U^{\frac{1}{2}} \Delta A C^{\frac{1}{2}}\|_F^2$$

4 $U = I - C$

