Conformal PID Control

Anastasios N. Angelopoulos, Emmanuel J. Candès, Ryan J. Tibshirani

Berkeley
Stanford

the goal: Uncertainty for **arbitrary distribution shifts.**

Prediction sets!

$$\frac{1}{T}\sum_{t=1}^{T} \mathbf{1}(y_t \in C_t(x_t)) = 1 - \alpha$$

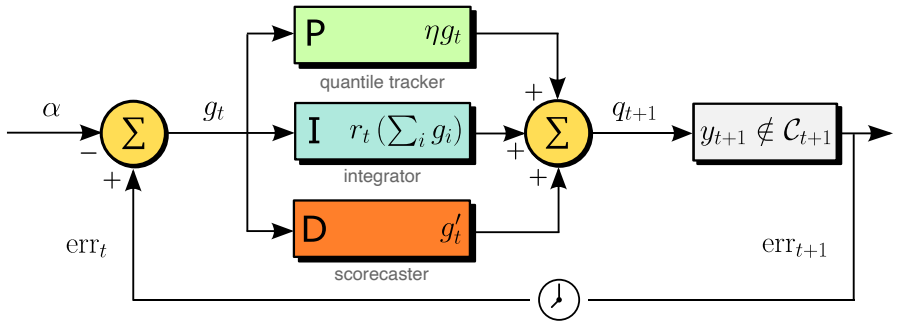
the sets:

score function

$$C_t = \{y : s(x_t, y) \leq q_t\}$$

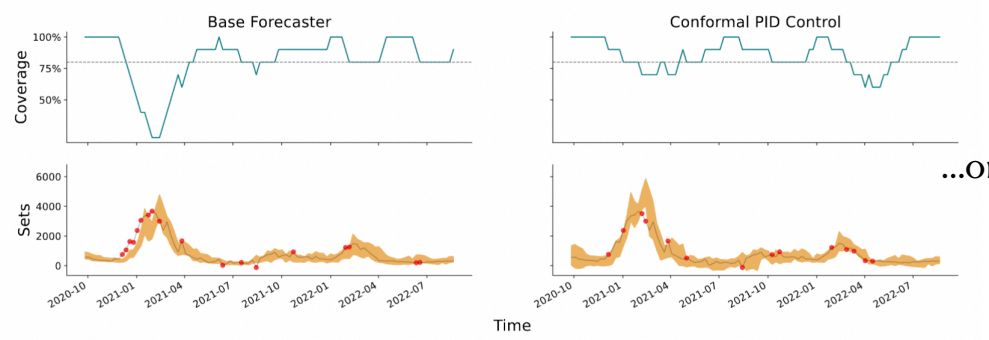
...same form as conformal prediction!

the algorithm:



...run PID control on errors!

the results:



...on the real CDC COVID forecasts!

github.com/aangelopoulos/conformal-time-series