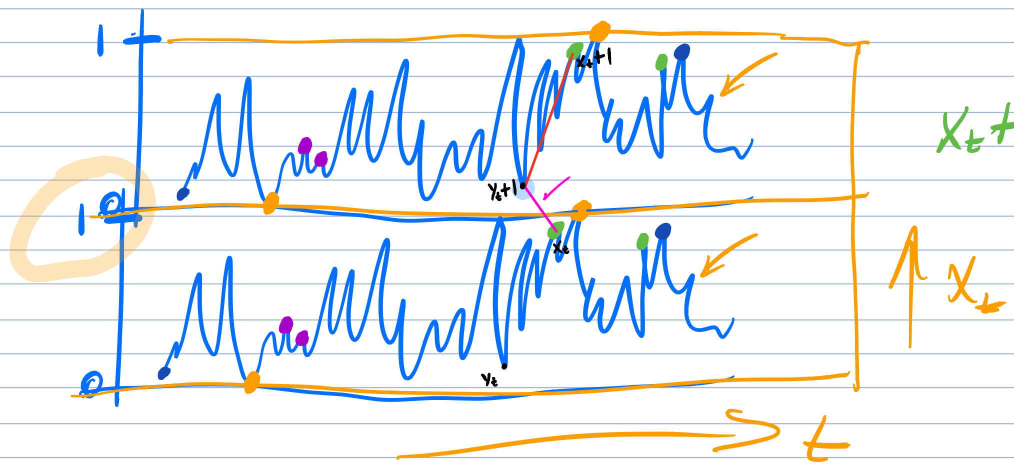


X_t es mi serie

$X_{min} = \min \{X_t : \forall t\}$

$X_{max} = \max \{X_t : \forall t\}$

$d(X_{t_1}, X_{t_2})$

$[i] \in \mathbb{Z}_p$ "enteros módulo p"

$i \in \{0, 1, 2, \ldots, p-1\}$

$+$:

$$[i] + [j] = [k]$$

$$i + j \overset{p}{=} k$$

residuo

$$i + j = rp + k$$

$p = 7$

$$\mathbb{Z}_7 = \{[0], [1], [2], [3], [4], [5], [6]\}$$

+	[0]	[1]	[2]	[3]	[4]	[5]	[6]
[0]	[0]	[1]	[2]	[3]	[4]	[5]	[6]
[1]	[1]	[2]	[3]	[4]	[5]	[6]	[0]
[2]	[2]	[3]	[4]	[5]	[6]	[0]	[1]
[3]	[3]	[4]	[5]	[6]	[0]	[1]	[2]
[4]	[4]	[5]	[6]	[0]	[1]	[2]	[3]
[5]	[5]	[6]	[0]	[1]	[2]	[3]	[4]
[6]	[6]	[0]	[1]	[2]	[3]	[4]	[5]

$$4 + 4 = 8 = 1 \cdot 7 + 1$$

$$4 + 5 = 9 = 1 \cdot 7 + 2$$

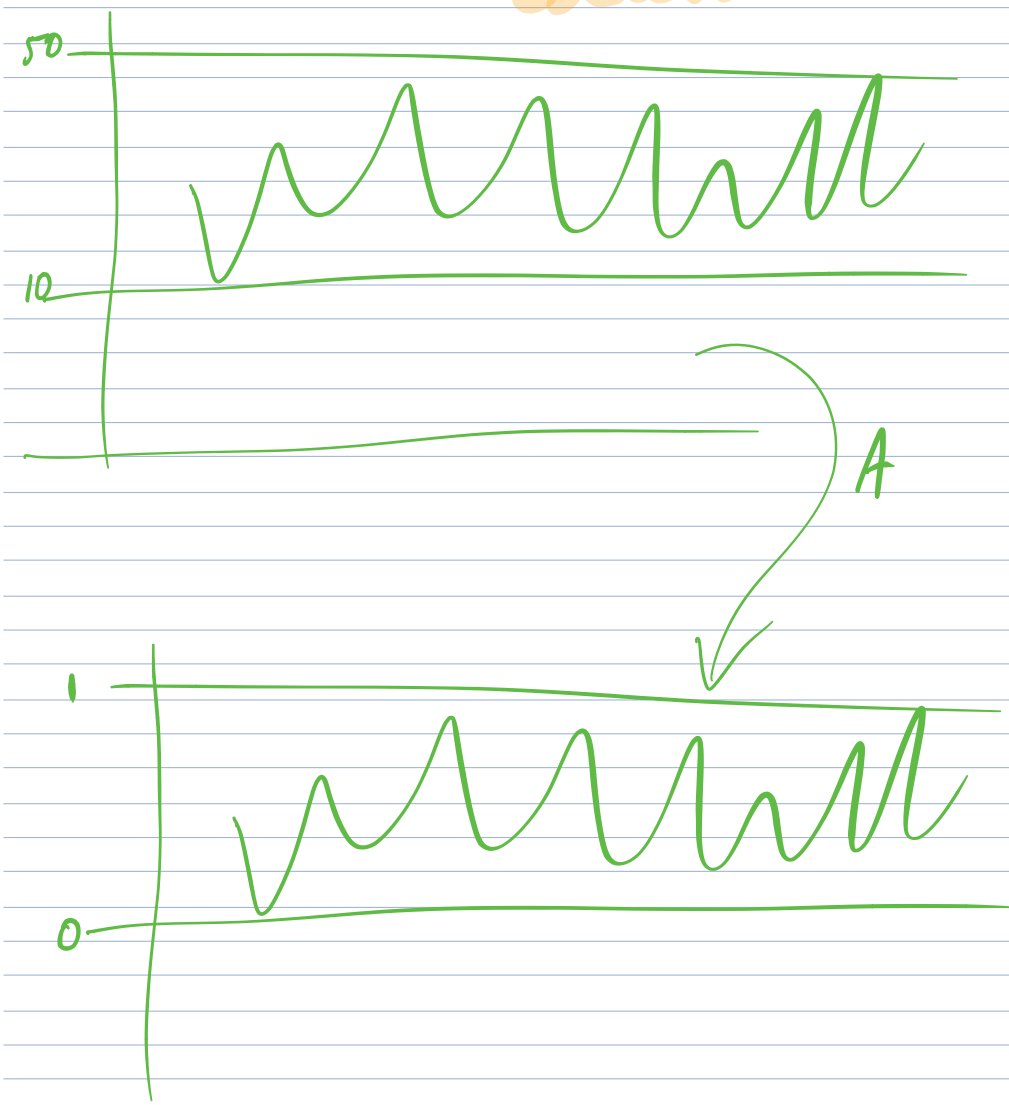
Transformación Afín

$$A(X_t) = \frac{X_t - X_{min}}{X_{max} - X_{min}}$$

$A(X_{min}) = 0$

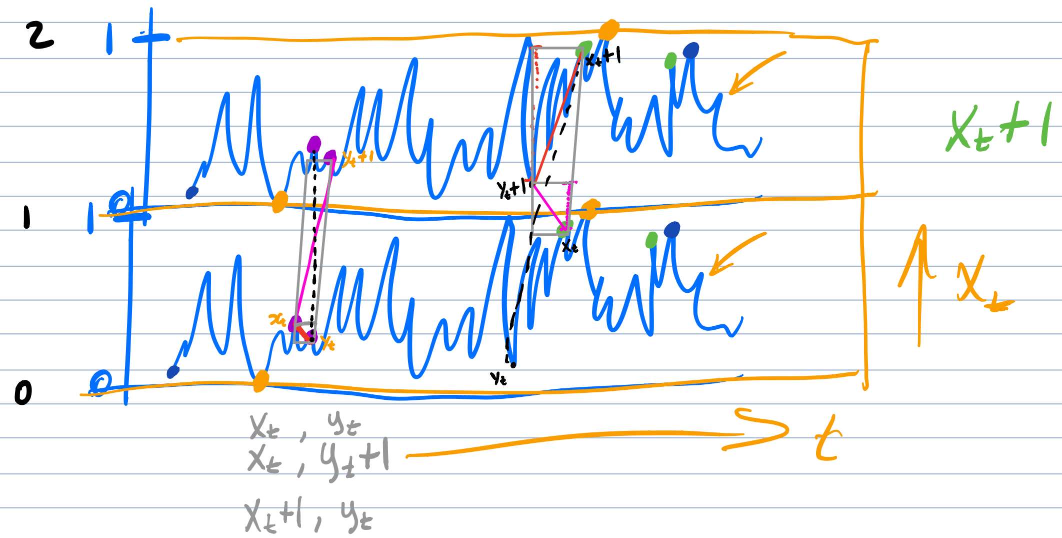
$A(X_{max}) = 1$

escala



$B(X_t) = X_t + 1$

calcula la copia de arriba



$$d(x_t,y_t) = \min\{\underline{d(x_t,y_t)}\ ,\ \underline{d(x_t, y_t+1)}\}$$

$\min\{d_e($

Plan

1. Pasar la serie al intervalo $[0,1]$
2. Crear la copia
3. Calcular distancias euclidianas en misma copia y en copias alternas
4. tomar d' como la dist. mínima de estas 2 distancias euclidianas
5. Regresar la distancia a la escala original (multiplicar)

1. $x_t \to A(x_t) \qquad y_t \to A(y_t)$

2. $y_t \to A(y_t) \to B(A(y_t))$

3. $d_e(A(x_t), B(A(y_t)))$ copias alternas

$de(A(x_t), A(y_t))$ misma copia

4. $d'(x_t, y_t) = \min\{ d(A(x_t), B(A(y_t))), d(A(x_t), A(y_t)) \}$

5. $d(x_t, y_t) = \text{escala} * d'(x_t, y_t)$

$$(x_{max} - x_{min}) * \min\left\{ \left(\frac{x_t - x_{min}}{x_{max} - x_{min}}, \frac{y_t - x_{min}}{x_{max} - x_{min}} + 1 \right), d\left(\frac{x_t - x_{min}}{x_{max} - x_{min}}, \frac{y_t - x_{min}}{x_{max} - x_{min}} \right) \right\}$$

$$\boxed{\{x_t\}_t = \{y_t\}_t \quad y_t = x_{t+i}}$$

$$= \min\{ d(x_t - x_{min}, y_t - x_{min} + (x_{max} - x_{min})), d(x_t - x_{min} + (x_{max} - x_{min}), y_t - x_{min}), d(x_t - x_{min}, y_t - x_{min}) \}$$

$$= \min\{ d(x_t - x_{min}, y_t + x_{max} - 2x_{min}), d(x_t + x_{max} - 2x_{min}, y_t - x_{min}), d(x_t - x_{min}, y_t - x_{min}) \}$$

$$= \min\{ |(x_t - x_{min}) - (y_t + x_{max} - 2x_{min})|,$$
$$|(x_t + x_{max} - 2x_{min}) - (y_t - x_{min})|,$$
$$|(x_t - x_{min}) - (y_t - x_{min})| \}$$

$$= \min\{ |x_t - y_t - x_{max} + x_{min}|, |x_t - y_t - x_{max} + x_{min}|, |x_t - y_t| \}$$

$$= \min\{ |x_t - y_t - (x_{max} - x_{min})|, |x_t - y_t| \}$$

Tarea programar

se descarta por estar repetido

min(3,3,5)
=min(3,8)
=min(3,5,5)

$$(x_t + 1) - y_t$$
$$= x_t - y_t + 1$$
$$= x_t - (y_t - 1)$$

Caso A:

$x_t < y_t$

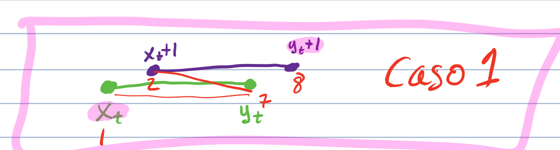
caso 1:

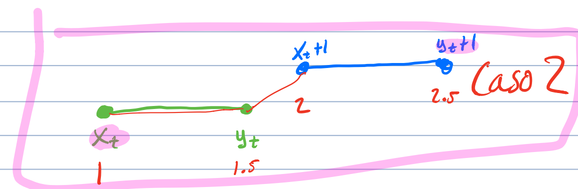
$x_t + 1 < y_t$

caso 2:

$x_t + 1 \geq y_t$

A





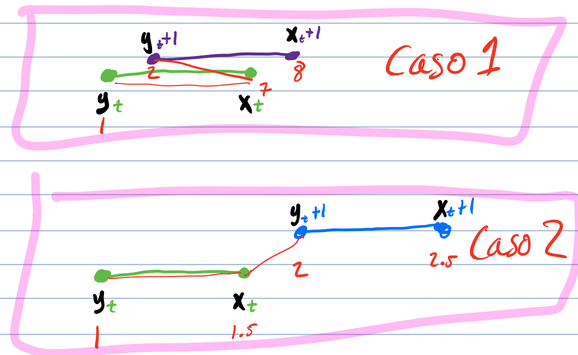
Caso B:

$x_t > y_t$

caso 1:
$x_t > y_t + 1$

caso 2:
$x_t \leq y_t + 1$

B



A1: descartar $d(x_t, y_t+1)$

A2: "

B1: descartar $d(x_t+1, y_t)$

B2: "