Prophet

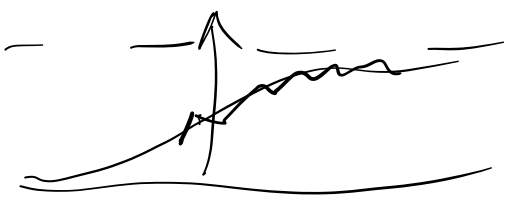
$$y_t = g(t) + s(t) + h(t)$$

тренд сезон. праздники

1) $$g(t) = \frac{C(t)}{1 + \exp\left(-(k + a(t)^T \delta)(t - (m + a(t)^T \gamma))\right)}$$

capacity

$\delta \sim$ laplace(0, τ)



2)

$$g(t) = (k + a(t)^T \delta)t + (m + a(t)^T \gamma)$$

$$s(t) = \sum_{n=1}^{N} \left(a_n \cos\left(\frac{2\pi n t}{P}\right) + b_n \sin\left(\frac{2\pi n t}{P}\right) \right)$$

Yearly, $N = 10$, $P = 365.25$

Weekly, $N = 3$, $P = 7$

$h(t) = Z(t)\,k \sim N(0, \sigma^2)$

$\Rightarrow$ []

$Z(t) = [I\{t \in D_1\}, \ldots, I\{t \in D_K\}]$

D_k – мн-во дней праздника k

$p(w)$ – prior

$p(data|w)$ – lik.

$$p(w|data) = \frac{p(w, data)}{p(data)} = \frac{p(data|w)\,p(w)}{\int p(data|w)\,p(w)\,dw}$$

↑ max

1) ML $p(data|w) \to \max_w$
2) MAP $p(data|w)\,p(w) \to \max_w$
3) Явно вычислить $p(w|data)$
4) Variational Inference } sampling from posterior
5) MCMC