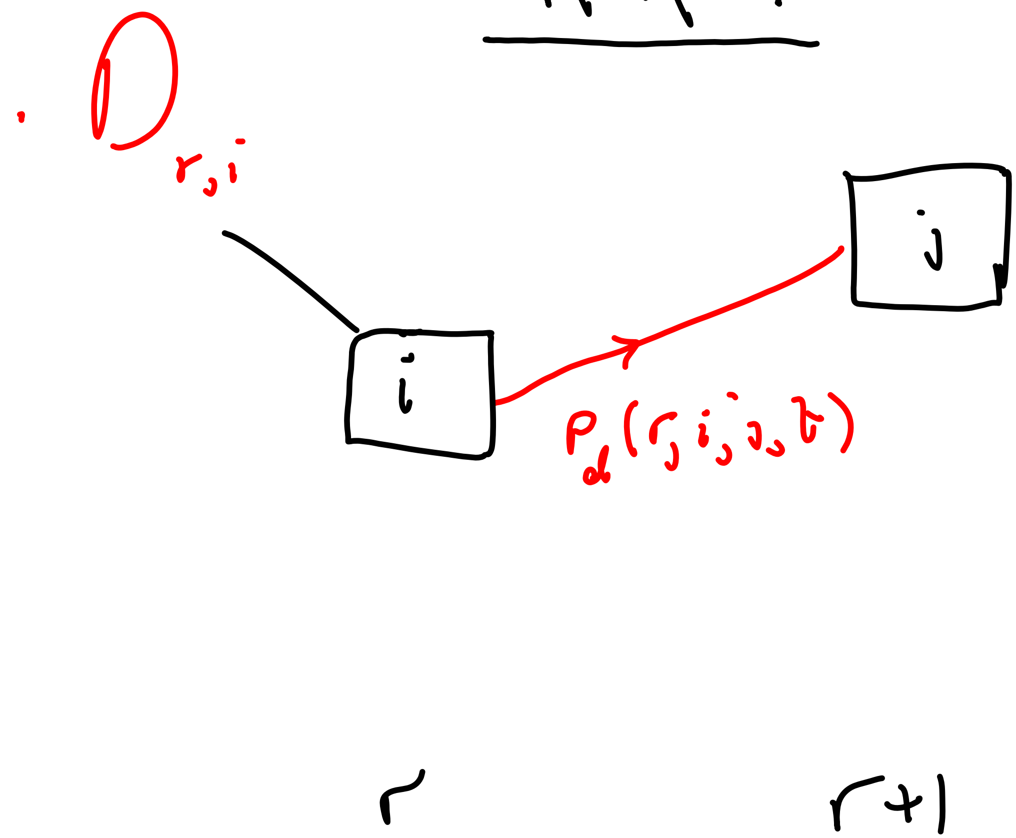
9/11/09



(i) Minimised expected time

(ii) Maximise probability that you arrive before time T.

$$g_r(i,t) = \max_{d \in D_{r,i}} \left\{ \sum_{j,\tau} p_d(r,i,j,\tau)\, g_{r+1}(j,t+\tau) \right\}$$

N ranges:

$$g_{N+1}(F,t) = \begin{cases} 0 & t > T \\ 1 & t \leq T \end{cases}$$

One machine; N periods; production cost $c(x)$: Random demand.

$$P_r(d_n = d) = p_{n,d}$$

Maximum storage H.

Penalty cost π per unit of unfilled demand

Minimise Expected Cost

Decide before demand in period n is known.

$$f_n(h) = \min_{x \geq 0} \left[c(x) + \sum_d p_{n,d} \left(\quad \right) \right]$$

$$\pi(d - x - h)^+ + f_{n+1}\left(\min\left\{H, (h+x-d)^+\right\}\right)$$

$$\xi^+ = \max\{0, \xi\}$$

Now, get demand, choose x

$$g_n(h) = \sum_d p_{n,d} \min_x \left\{ c(x) + \left(\quad \right) \right\}$$

$$\pi(d-x-h)^+ + g_{n+1}\left(\min\left\{H, (h+x-d)^+\right\}\right)$$

$$g_n(h) \le f_n(h)$$

$$E\left(\min\{X_1, X_2, \dots\}\right) \le \min\left(E(X_1), E(X_2), \dots\right)$$