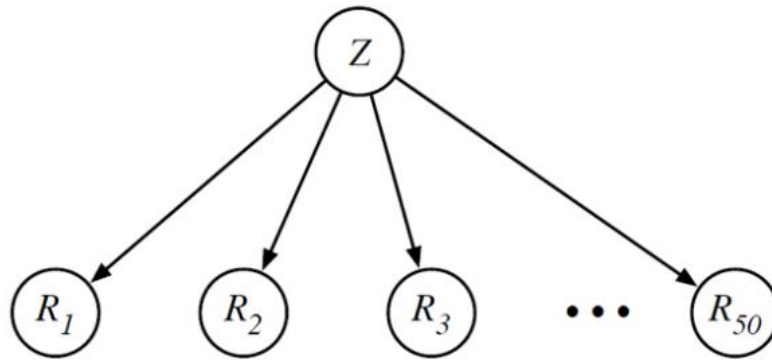


$Z \in \{1, 2, \dots, k\}$       k types of movie goer



$R_i$ -different movies

$$P\left(R_\ell = 1 \mid \left\{R_j = r_j^{(t)}\right\}_{j \in \Omega_t}\right) = \sum_{i=1}^k P\left(Z = i \mid \left\{R_j = r_j^{(t)}\right\}_{j \in \Omega_t}\right) P(R_\ell = 1 \mid Z = i) \quad \text{for } \ell \notin \Omega_t.$$

$\Omega_t$  : set of movies seen and rated by  $t^{\text{th}}$  person