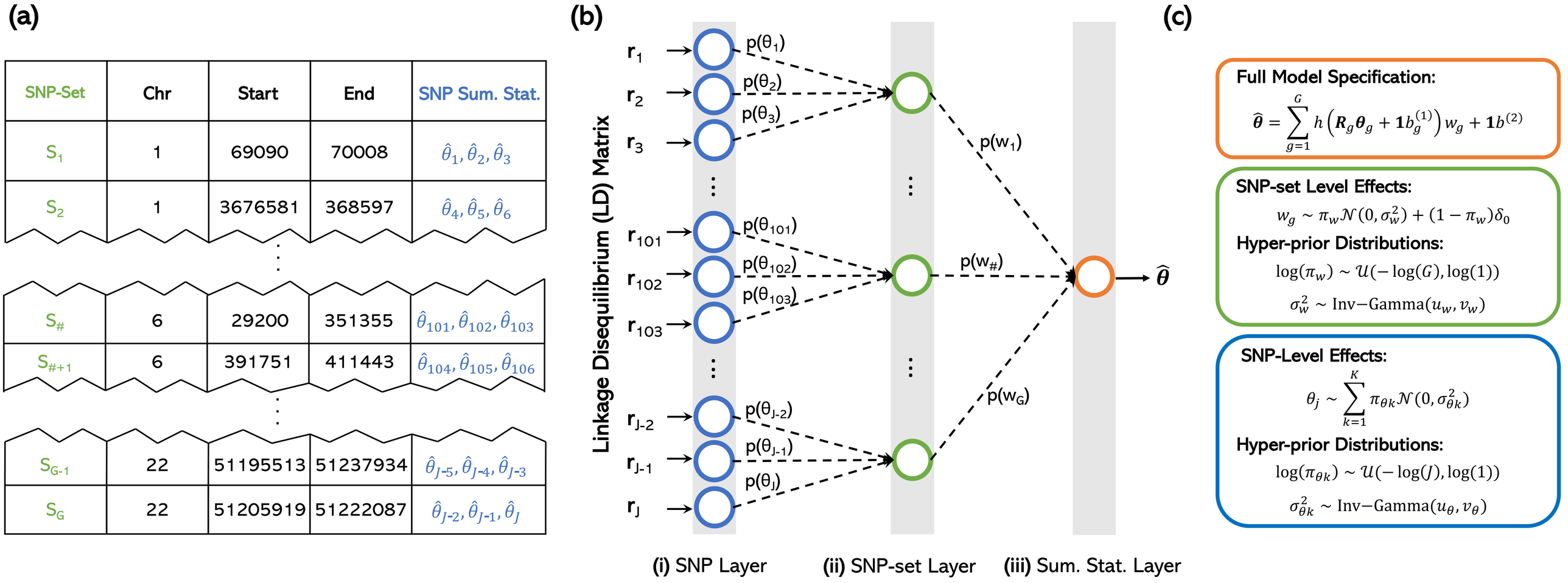
(a)
SNP-Set
Chr
Start
End
SNP Sum. Stat.
S1
1
69090
70008
θ̂1, θ̂2, θ̂3
S2
1
3676581
368597
θ̂4, θ̂5, θ̂6
S#
6
29200
351355
θ̂101, θ̂102, θ̂103
S#+1
6
391751
411443
θ̂104, θ̂105, θ̂106
SG-1
22
51195513
51237934
θ̂J-5, θ̂J-4, θ̂J-3
SG
22
51205919
51222087
θ̂J-2, θ̂J-1, θ̂J
(b)
Linkage Disequilibrium (LD) Matrix
r1
r2
r3
r101
r102
r103
rJ-2
rJ-1
rJ
p(θ1)
p(θ2)
p(θ3)
p(θ101)
p(θ102)
p(θ103)
p(θJ-2)
p(θJ-1)
p(θJ)
p(w1)
p(w#)
p(wG)
θ̂
(i) SNP Layer
(ii) SNP-set Layer
(iii) Sum. Stat. Layer
(c)
Full Model Specification:
$\hat{\boldsymbol{\theta}} = \sum_{g=1}^{G} h\left(\boldsymbol{R}_g\boldsymbol{\theta}_g + \mathbf{1}b_g^{(1)}\right) w_g + \mathbf{1}b^{(2)}$
SNP-set Level Effects:
$w_g \sim \pi_w \mathcal{N}(0, \sigma_w^2) + (1-\pi_w)\delta_0$
Hyper-prior Distributions:
$\log(\pi_w) \sim \mathcal{U}(-\log(G), \log(1))$
$\sigma_w^2 \sim \text{Inv}-\text{Gamma}(u_w, v_w)$
SNP-Level Effects:
$\theta_j \sim \sum_{k=1}^{K} \pi_{\theta k}\mathcal{N}(0, \sigma_{\theta k}^2)$
Hyper-prior Distributions:
$\log(\pi_{\theta k}) \sim \mathcal{U}(-\log(J), \log(1))$
$\sigma_{\theta k}^2 \sim \text{Inv}-\text{Gamma}(u_\theta, v_\theta)$