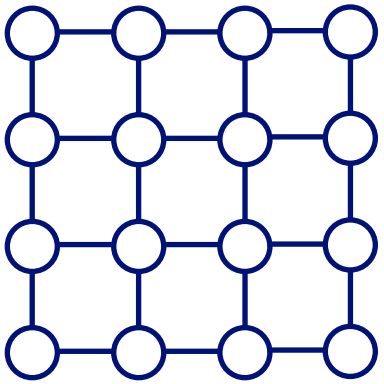
Discrete Markov Random Fields

Ising and Potts Models

$$p(z) = \frac{1}{Z(\beta)} \prod_{(s,t)\in E} \psi_{st}(z_s, z_t)$$

$$\log \psi_{st}(z_s, z_t) = \begin{cases} \beta_{st} > 0 & z_s = z_t \\ 0 & \text{otherwise} \end{cases}$$

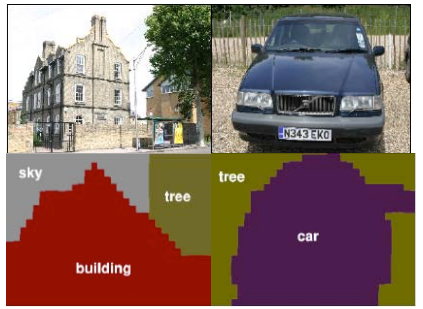


GrabCut: *Rother, Kolmogorov, & Blake 2004*

Previous Applications

- Interactive foreground segmentation
- Supervised training for known categories

…but learning is challenging, and little success at unsupervised segmentation.



Verbeek & Triggs, 2007