Using this MRF, we can see that all $v_1, \dots, v_n$ are conditionally independent given C. This will allow us to use the known appearance models to get $P(C \mid v_1, \dots, v_n)$

If $v_i \perp v_j \mid C$ for all i, j then

$$P(v_1, \dots, v_n \mid C) = \prod_{i=1}^{k} P(v_i \mid C) = \prod_{i=1}^{k} P(v_i \mid c_i)$$

Using Bayes Rule:

$$P(C \mid v_1, \dots, v_n) = \frac{P(C, v_1, \dots, v_n)}{P(v_1, \dots, v_n)} = \frac{P(v_1, \dots, v_n \mid C)\, P(C)}{P(v_1, \dots, v_n)}$$

Now suppose $C = \{C_i = i, C_j = j, C_{\dots}\}$
and we swap C_i and C_j to get $C' = \{C_i = j, C_j = i, C_{\dots}\}$

Then
$$A(C' \mid C) = \min\left(1, \frac{\dfrac{P(v_1, \dots, v_n \mid C') \cdot P(C')}{P(v_1, \dots, v_n)}}{\dfrac{P(v_1, \dots, v_n \mid C) \cdot P(C)}{P(v_1, \dots, v_n)}}\right)$$

$$= \min\left(1, \frac{P(v_1, \dots, v_n \mid C') \cdot P(C')}{P(v_1, \dots, v_n \mid C) \cdot P(C)}\right) \rightarrow P(C) = P(C') = \frac{1}{k!} \rightarrow \frac{P(C')}{P(C)} = 1$$

$$= \min\left(1, \frac{P(v_1, \dots, v_n \mid C_i = j, C_j = i, C_{\dots})}{P(v_1, \dots, v_n \mid C_i = i, C_j = j, C_{\dots})}\right)$$

$$\boxed{= \min\left(1, \frac{P(v_i \mid C_i = j) \cdot P(v_j \mid C_j = i)}{P(v_i \mid C_i = i) \cdot P(v_j \mid C_j = j)}\right)}$$