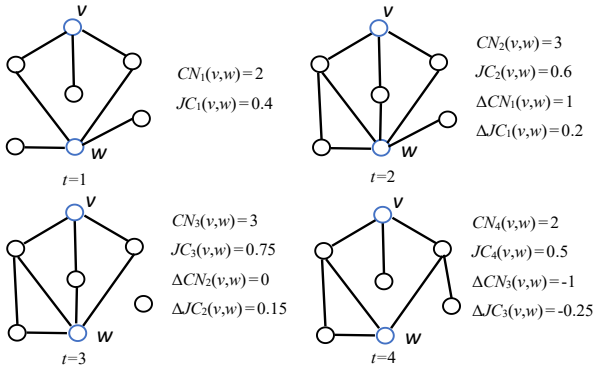

Fig. 4. An example of *SLM-Vp*.

We can give an example to illustrate that how link prediction algorithm *SLM-Vp* works in a dynamic social network. To simplify the calculation, we use two classifiers (f_{CN} and f_{JC} respectively) for two structure properties (*CN* and *JC* respectively). In figure 4, two structure properties *CN* and *JC* are calculated at time $t = 1$, $t = 2$, $t = 3$ and $t = 4$, and variations of *CN* and *JC* can be calculated between two adjacent time slices. In detail, using the definition of features in table 1, we can get six values for an arbitrary pair of node v and w: ΔCN_1=1, ΔCN_2=0, ΔCN_3= -1, ΔJC_1=0.2, ΔJC_2=0.15, ΔJC_3= -0.25. Then we can intuitively obtain two vectors $\overrightarrow{a}$=(1, 0, -1) and $\overrightarrow{b}$=(0.2, 0.15, -0.25). To address this prediction problem, we need to know the label $L(v,w)$ of establishing link between v and w. As shown in figure 4, we set $L^1(v,w)$=0, $L^2(v,w)$=0, $L^3(v,w)$=0, $L^4(v,w)$=0 and $L^5(v,w)$=0, then the labels of the two vectors $\overrightarrow{a}$ and $\overrightarrow{b}$ are 0. Moreover, in order to predict the link state of n arbitrary pairs of node, n vectors can be calculated for two structure properties *CN* and *JC*. Thus, two classifiers f_{CN} and f_{JC} are learned by training all instances in training set, and the weight of classifiers can be optimized. Finally, the probability of establishing link between v and w will be predicted at time $t = 5$.