Characterizing Ego-Networks Using Motifs

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Summary

We assess the potential of network motif profiles to characterize networks in much the same way that a bag-of-words strategy allows text documents to be compared in a vector space framework. This work was originally published in [1].This is potentially valuable as a generic strategy for comparing networks, particularly *ego* networks, in structural terms. The basic strategy is shown in Figure 1. The motif counts suggest that A and C are structurally similar and B is quite different. The paper considers the computational challenges and model selection decisions involved in network motif profiling. It includes three case-studies concerning the analysis of Wikipedia edit networks, YouTube spam campaigns and peer to peer lending in the Prosper marketplace.
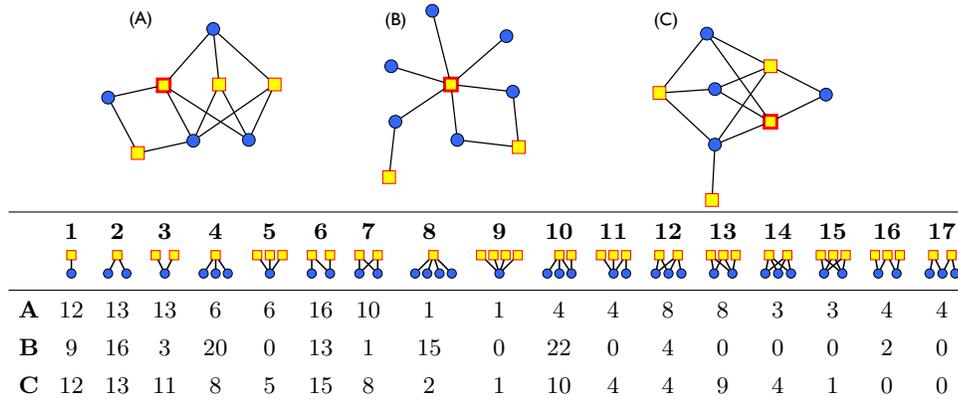
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
A	12	13	13	6	6	16	10	1	1	4	4	8	8	3	3	4	4
B	9	16	3	20	0	13	1	15	0	22	0	4	0	0	0	2	0
C	12	13	11	8	5	15	8	2	1	10	4	4	9	4	1	0	0

Fig. 1. An example of motif counts in three ego-networks A, B and C. The networks are simple versions of the Wikipedia edit networks. The yellow nodes are articles and the blue nodes are editors, the red border indicates the ego node.

References

1. Cunningham, P., Harrigan, M., Wu, G., O'Callaghan, D.: Characterizing ego-networks using motifs. Network Science 1(02), 170–190 (2013)