Network data structures have been used extensively in recent years for modeling entities and their ties, across diverse disciplines. Analyzing networks involves understanding the complex relationships between entities, as well as any attributes, statistics, or groupings associated with them. A widely used class of visualizations called sociograms excel at showing the network topology, attributes, and groupings simultaneously. However, many sociograms are not easily readable or difficult to extract meaning from because of the inherent complexity of the relationships and the number of items designers try to render in limited space.

We introduce a technique called motif simplification that leverages the repeating motifs in networks to reduce visualization complexity and increase readability. We propose replacing motifs in the network with easily understandable glyphs that (1) require less screen space, (2) are easier to understand in the context of the network, (3) can reveal otherwise hidden relationships, and (4) result in minimal loss of fidelity. We tackle two frequently occurring and high-payoff motifs: a fan motif consisting of a fan of nodes with only a single neighbor connecting them to the network, and a parallel motif of functionally equivalent nodes that span two or more other nodes together. We contribute the design of representative glyphs for these motifs, algorithms for detecting them, a publicly available reference implementation, and initial case studies and user feedback that support the motif simplification approach.

**PAPERS**