(i) Output from MIIC (ii) **Step 1**: Edge orientation priming and Edge removal (iii) **Step 2**: Edge orientation

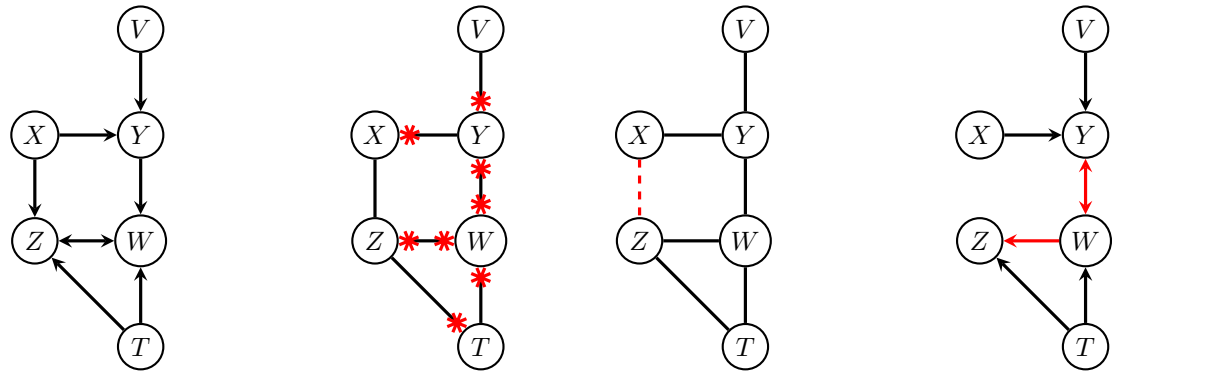

Figure 1. **A simple running example of MIIC_search&score's two-step implementation.** (i) The graph obtained by MIIC is used as starting point for MIIC_search&score two-step algorithm. (ii) Step 1 (Node scores): Edge orientation primings (∗) are obtained from the minimization of the node scores Eq. 14. Edges without priming at either extremity are removed at the end of Step 1 (e.g. X−−Z). (iii) Step 2 (Edge orientation scores) : Edge orientations for directed or bidirected edges are obtained by optimizing their local contributions (Table 1) to the global likelihood score (Eq. 12) restricted to ac-connected subsets containing up to two-collider paths. This amounts to minimizing each edge orientation score w.r.t. its nodes' parents and spouses (Table 1), see main text and Appendix D for details. The orientations of the edges highlighted in red have been modified with respect to their orientations in the MIIC network (i) used as starting point for MIIC_search&score.