Appendix A

Errata

In Section 2.1, "Completely" should be "Completed", and CPDAG is the abbreviation of Completed Partially Directed Acyclic Graph. In the sub-section (Assumptions), the paragraph "Causal sufficiency assunption" should be "Causal sufficiency assumption". The conditions in Algorithm 1 and Algorithm 2 have been corrected in Algorithm 3 and Algorithm 4.

Algorithm 3: Causal skeleton search of PC algorithm (modified based on the one in [7]).

Input: i.i.d. data and significance level for statistical tests
Result: Causal skeleton (undirected graph), list of d-separation sets

Initialize with a complete undirected graph G;
$n \leftarrow 0$;
while *for some ordered pairs of adjacent vertices* X *and* Y*, the set* $Adjacencies\ (G, X) \backslash \{Y\}$ *is not of cardinality less than* n **do**
    while *some ordered pairs of adjacent variables* X *and* Y *of which* $Adjacencies(G, X) \backslash \{Y\}$ *has cardinality greater than or equal to* n*, and a subset* **S** *of* $Adjacencies(G, X) \backslash \{Y\}$ *of cardinality* n *have not been tested for d-separation.* **do**
        Select an ordered variable pair X and Y that are adjacent in G such that $Adjacencies(G, X) \backslash \{Y\}$ has cardinality greater than or equal to n, and a subset **S** of $Adjacencies(G, X) \backslash \{Y\}$ of cardinality n;
        if X *and* Y *are independent conditional on* **S** **then**
            Delete the edge between X and Y from G;
            Record **S** in $D\text{-}Sepsets(X, Y)$ and $D\text{-}Sepsets(X, Y)$;
        end
    end
    $n \leftarrow n + 1$;
end

Algorithm 4: Orientation of the causal skeleton of PC algorithm (modified based on the one in [7]).

Input: Causal skeleton, list of d-separation sets
Result: CPDAG

while (X, Y, Z) *is an unshielded triple* **do**
  if Y *is not in D-Sepsets*(X, Z) **then**
    orient $X - Y - Z$ as $X \rightarrow Y \leftarrow Z$;
  end
end
while *some edges can be oriented* **do**
  if $A \rightarrow B - C$ *and* A *and* C *are not adjacent* **then**
    orient $B - C$ as $B \rightarrow C$;
  end
  if $A \rightarrow B \rightarrow C$ *and* $A - C$ **then**
    orient $A - C$ as $A \rightarrow C$;
  end
  if $A \rightarrow B \leftarrow C$, $A - D - C$, $B - D$, *and* A *and* C *are not adjacent* **then**
    orient $B - D$ as $B \rightarrow D$;
  end
end