Algorithm 1 $\overline{MMPC}$ Algorithm

procedure $\overline{MMPC}$ (T,$\mathcal{D}$)
Input: target variable T; data $\mathcal{D}$
Output: the parents and children of T in any Bayesian network faithfully representing the data distribution
%Phase I: Forward
CPC $= \emptyset$
repeat
$\langle F, assocF \rangle = MaxMinHeuristic(T; \mathbf{CPC})$
if $assocF \neq 0$ **then**
CPC $=$ **CPC** $\cup F$
end if
until CPC has not changed

%Phase II: Backward
for all $X \in$ **CPC do**
if $\exists \mathbf{S} \subseteq$ **CPC**, s.t. $Ind(X; T|\mathbf{S})$ **then**
CPC $=$ **CPC** $\setminus \{X\}$
end if
end for

return CPC
end procedure

procedure MaxMinHeuristic(T,**CPC**)
Input: target variable T; subset of variables **CPC**
Output: the maximum over all variables of the minimum association with T relative to **CPC**, and the variable that achieves the maximum
$assocF = \max_{X \in \mathcal{V}} MinAssoc(X; T|\mathbf{CPC})$
$F = \arg\max_{X \in V} MinAssoc(X; T|\mathbf{CPC})$
return $\langle F, assocF \rangle$
end procedure