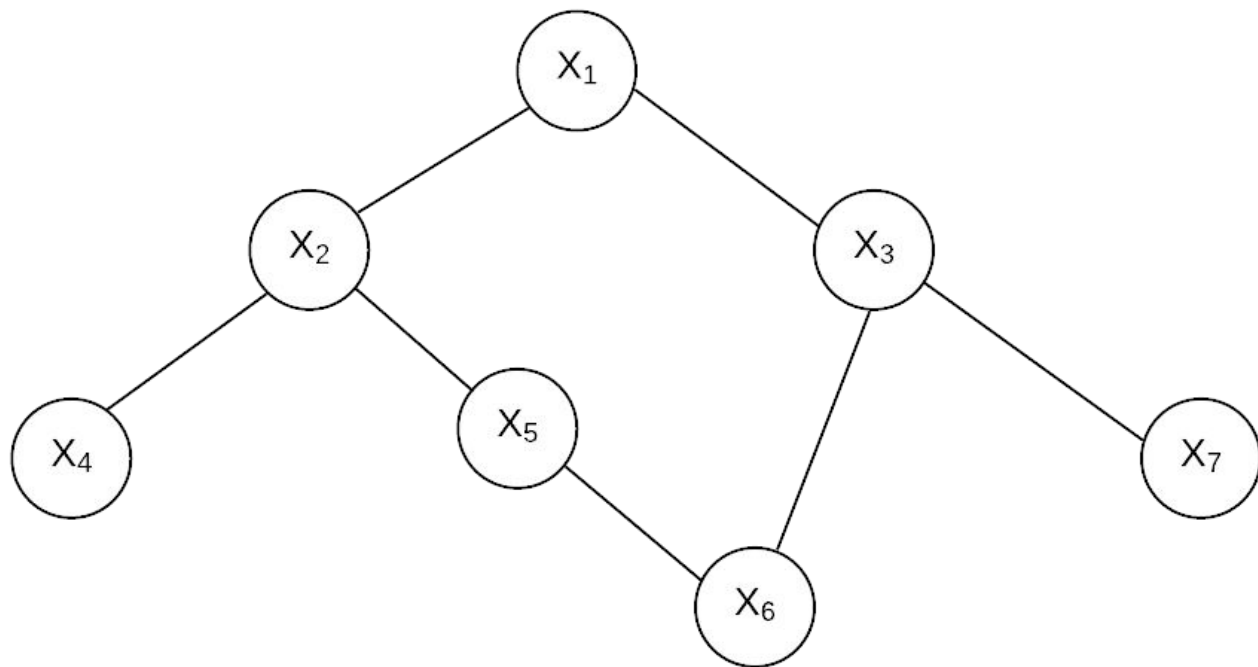


Cec-DPOP

Example

Constraint Graph



Brc-DPOP

1. $M_{21} \times M_{11} = M_{21}$
2. $M_{52} \times M_{21} = M_{51}$
3. $M_{65} \times M_{51} = M_{61}$
4. $M_{36} \times M_{61} = M_{31}$

$O(e)$ messages exchanged to establish path

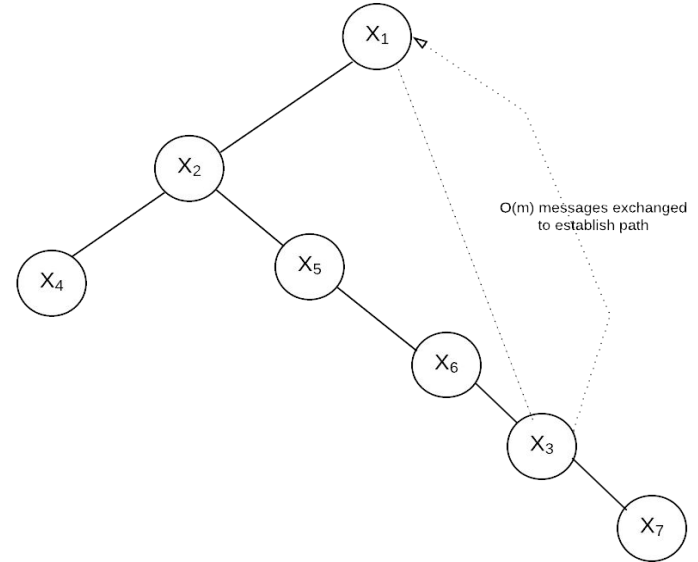


Fig: Brc-DPOP Pseudo Tree

Cec-DPOP

1. $M_{21} \times M_{11} = M_{21}$
2. $M_{52} \times M_{21} = M_{51}$
3. $M_{31} \times M_{11} = M_{31}$
4. $M_{63} \times M_{31} = M_{61}$
5. $M_{51} \times M_{16} = M_{56}$

$O(\log_e)$ messages exchanged to establish path

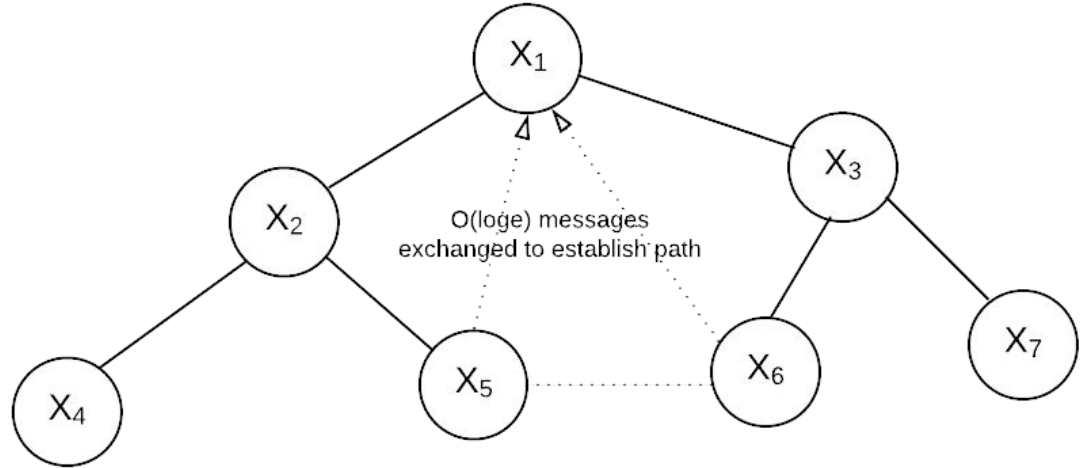


Fig: Cec-DPOP Pseudo Tree

Conclusion

- Cross edge consistency does the same work as branch consistency, but faster
- Lower tree height resulting in faster (with parallelism) DPOP Util and Value propagation