

Discussion on Application Strategy of Ubiquitous Smart Meter in Emergency Repair of Urban Distribution Network

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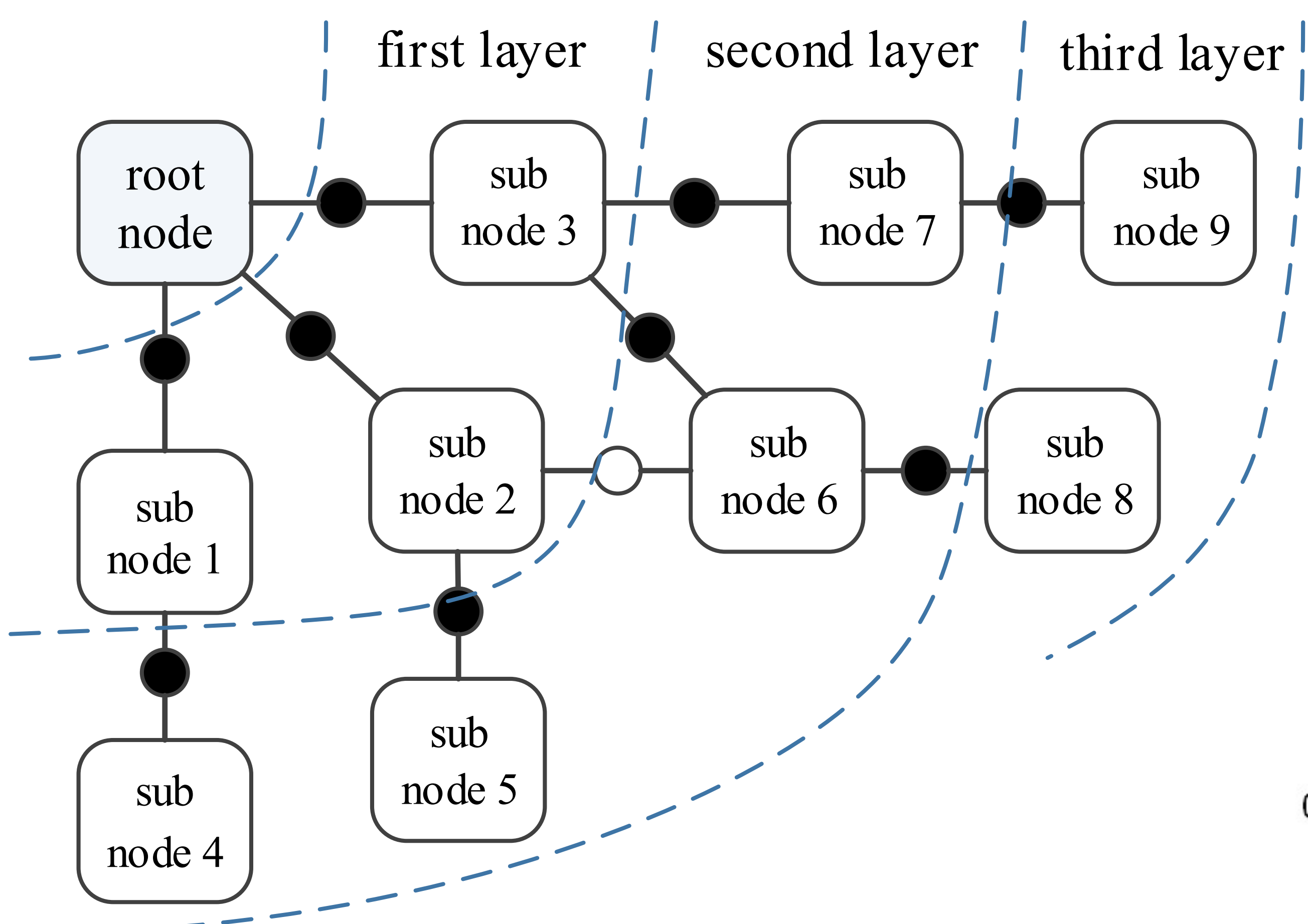
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Introduction

With the application of smart meter and High-speed Broadband Powerline Communication equipped in distribution network, it is able to achieve fast fault location in low-voltage power grid based on outage information.

Methods

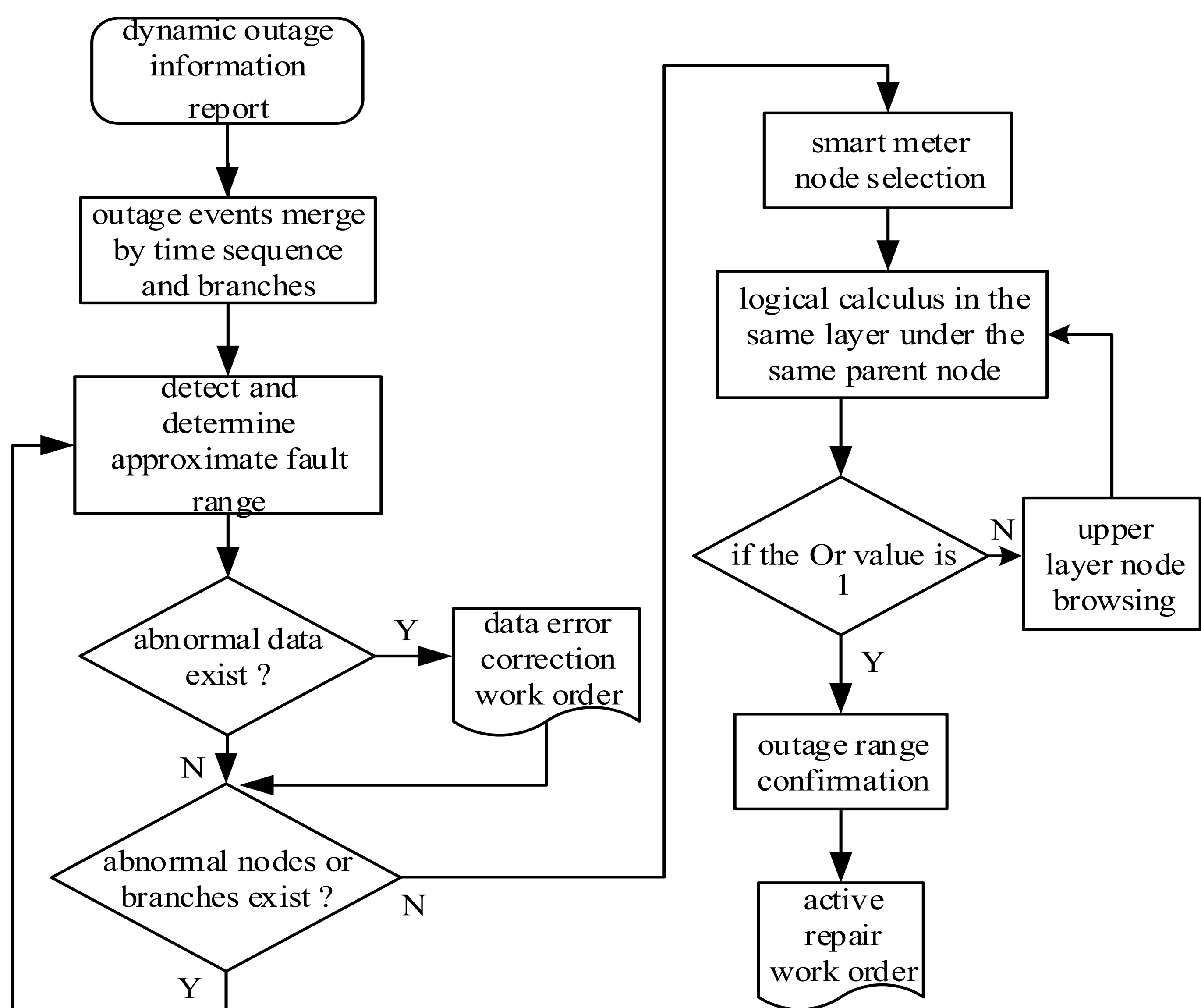
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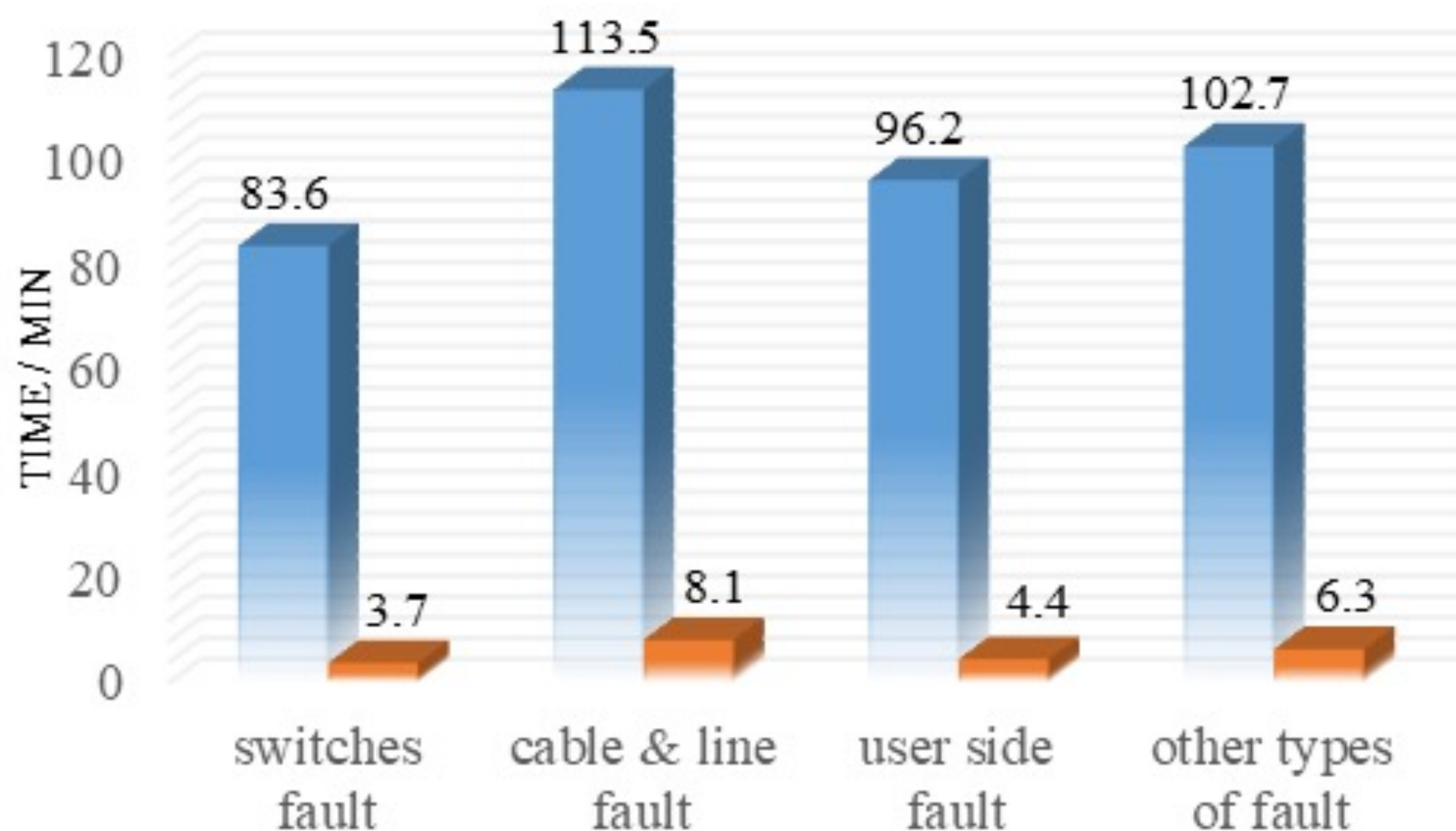
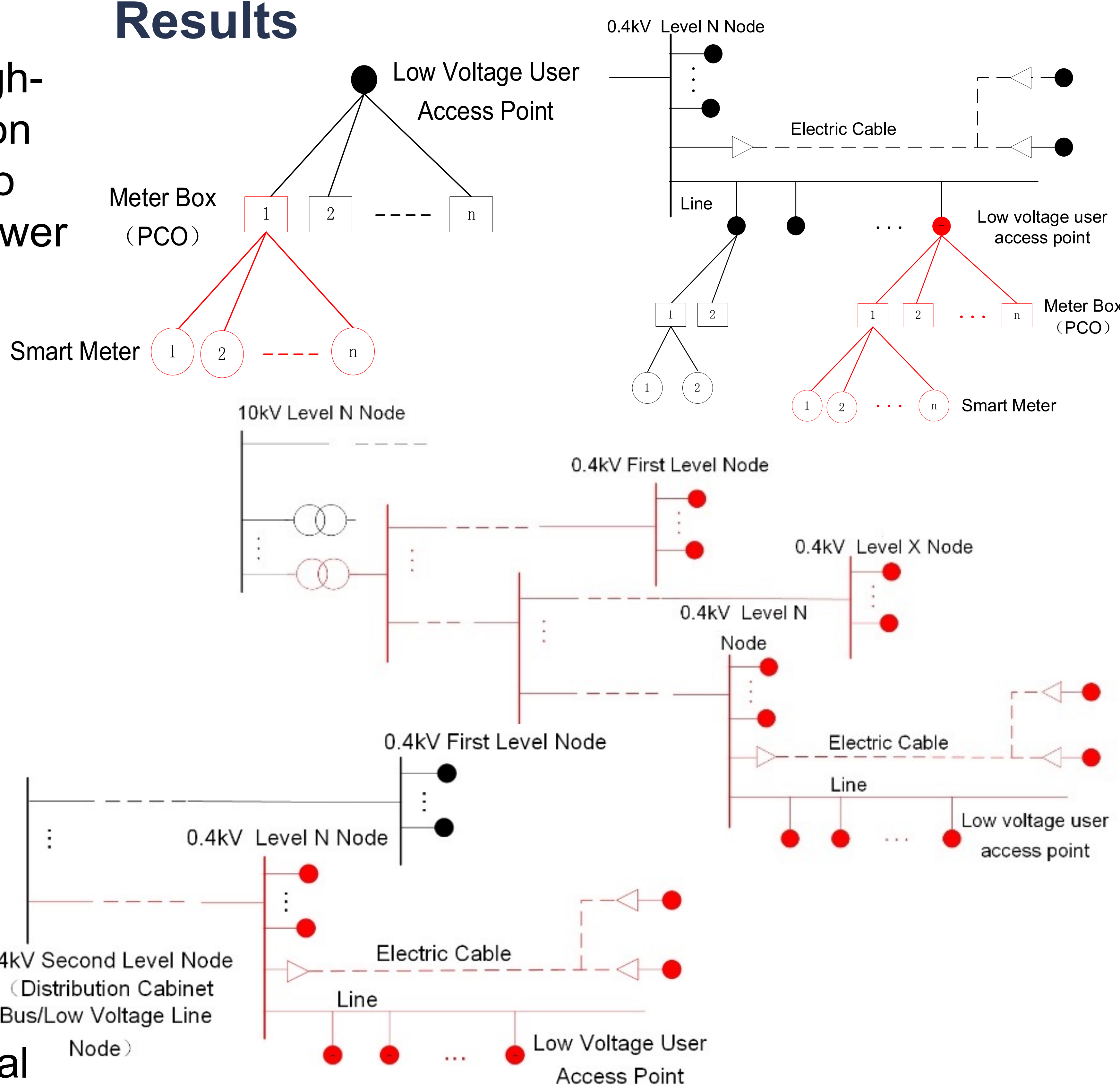
Grid observability analysis algorithm, Logical calculus of hierarchical nodes, fault diagnosis and judgment flow chart

$$\left(\bigcap_{i=1} V_i(L_s \in A_j)\right) \cap \left(\bigcup_{i=1} V_i(L_s \in A_j)\right) = 1$$

$$\bigcap_{i=1} V_i(L_s \in A_j) = 0, \bigcup_{i=1} V_i(L_s \in A_j) = 1 \quad \bigcup_{i=1} V_i(L_s \in A_j) = 0$$



Results



Compared with actual record, expected time cost of fault judgment and location when utilized the proposed method has been significantly reduced. While the accuracy reaches more than 95%.

Conclusions

Low-voltage fault location in distribution network utilizing smart meter, can help improve reliability.