

**FAULT LOCALIZATION AND RESTORATION OF
DISTRIBUTION NETWORK USING A MULTI AGENT
BASED SYSTEM**

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Thesis submitted in partial fulfilment of the requirement for the Degree of
Master of Science

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Sri Lanka

April 2015

Declaration

“I declare that this is my own work and this thesis does not incorporate without acknowledgement any material previously submitted for a Degree or Diploma in any other University or institute of higher learning and to the best of my knowledge and belief it does not contain any material previously published or written by another person except where the acknowledgement is made in the text.

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The above candidate has carried out research for the Masters Dissertation under my supervision.

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Abstract

Power distribution network reduces its reliability during the fault localization, isolation and network reconfiguration. High voltage and medium voltage distribution system fault localization process consumes more time and network reconfiguration get complex when there are more interconnections.

Therefore the objective of the research is to provide a methodological approach for the fault restoration problem in power distribution network of Sri Lankan using the de-centralized approach. Agent based solution was implemented with Multi Agent System (MAS) to address above issue and the system is characterized de-centralized nature and easily expandable nature. The system comprises with Application layer, Interface layer and communication layer. The application layer was developed using Java Agent Development Environment (JADE). The interface layer and the communication layer are tie together to confirm physical integration and which enables to use modern communication techniques with the system application.

The MAS based decentralized system can be applied to improve the reliability of Sri Lankan power distribution network.

Dedicated

To my parents

Acknowledgement

I would like to express my heartiest gratitude to my supervisors, Dr. K.T.M.U Hemapala and Dr. P.S.N De Silva for their support, guidance and valuable advices throughout these academic years. I would like to thank University of Moratuwa for giving me the opportunity for my Master studies. I would like to specially thank to Dr. P.S.N De Silva as the Head of Engineering of Lanka Electricity Company (LECO) and the Branch Manager and all staff of LECO Kotte Branch for giving me the support to accomplish my study by providing necessary details on power distribution network.

Finally, thanks to all lecturers & my friends, that I have been working with the throughout the period of study in University of Moratuwa.

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LIST OF ABBREVIATIONS

Abbreviation	Description
ACL	Agent Communication Language
AP	Agent Platform
AR	Auto Re-closer
CEB	Ceylon Electricity Board
DDLO	Drop Down Lift On
FIPA	Foundation for Intelligent Physical Agent
JADE	Java Agent Development Environment
LBS	Load Break Switch
LECO	Lanka Electricity Company
MAS	Multi Agent System
PSS	Primary Substation
SCADA	Supervisory Control and Data Acquisition