UNIVERSITI TEKNOLOGI MARA

DEVELOPMENT OF DEFORMATION MODELLING SOFTWARE ON GEODETIC MONITORING NETWORK USING ITERATIVE SIMILARITY TRANSFORMATION (IWST)

MUHAMMAD TAUFIK BIN ISMAIL

Thesis submitted in fulfillment
of the requirements for the degree of
Bachelor of Surveying Science and Geomatics (Hons)

Faculty of Architecture, Planning and Surveying

July 2017

AUTHOR'S DECLARATION

I declare that the work in this thesis/dissertation was carried out in accordance with the regulations of Universiti Teknologi MARA. It is original and is the results of my own work, unless otherwise indicated or acknowledged as referenced work. This thesis has not been submitted to any other academic institution or non-academic institution for any degree or qualification.

I, hereby, acknowledge that I have been supplied with the Academic Rules and Regulations for Post Graduate, Universiti Teknologi MARA, regulating the conduct of my study and research.

Name of Student	:	Muhammad Taufik Bin Ismail
Student I.D. No.	:	2014926851
Programme	:	Bachelor of Surveying Science and Geomatics – AP220
Faculty	:	Architecture, Planning & Surveying
Thesis/Dissertation Title	:	Development of Deformation Modelling Software on Geodetic Monitoring Network Using Iterative Similarity Transformation (IWST)
Signature of Student	:	……..
Date	:	July 2017

ABSTRACT

Deformation survey is an important activity in engineering surveys in order to determine the safety of the structure. Therefore, the deformation detection in the analysis of deformation is a crucial part that needs to be taken care of in deformation survey. Iterative Weighted Similarity Transformation (IWST) is the robust estimation method in deformation analysis. While the deformation modelling is a method to determine the pattern of deformation occurs on monitoring network. In this study, the process begins by using existing program network adjustment and deformation detection acquired from previous study and a new program based on deformation modelling is developed using MATLAB software throughout this study. The reliability of the program was evaluated using two sets of data which are the data from previous studies and observed data that collected during this study was conducted. The data consists of the geodetic monitoring network information, including coordinate, distance, angle and azimuth in two epochs for both data sets. Each set of data verified statistically through the program. The outcomes from this study are the results produced by the program used consist of adjustment result, deformation detection result and deformation modelling result tabulate in respect of each data sets. The results of deformation modelling consist of the model tested, the global test status which either passed or failed and deformation parameter. The determination of the best model will be based on passing the global test and the least parameter if there is more than one model passing the test. Based on previous data, the result of deformation modelling successfully determine the same model used in previous study as the best model. Meanwhile the observed data used in this study happened to occur two model passing the test and allowing the consideration of the second condition. The result of the program verified the reliability of developed program and ensure the program is succeeding in performing deformation analysis.

TABLE OF CONTENTS