UNIVERSITI TEKNOLOGI MARA

DEVELOPMENT OF APPLICATION TOOL FOR WELD IMPERFECTION INSPECTION USING MATLAB GUI (GRAPHICAL USER INTERFACE): DIGITAL RADIOGRAPHIC IMAGE

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AUTHOR'S DECLARATION

I declare that the work in this thesis 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 topic 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.

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ABSTRACT

A digital examination device for non destructive testing (NDT) such as digital radiography is nowadays increasingly applied in fabrication or welding industry to inspect defects in materials. The digital image can be acquired with high time efficient and less radiation compared to film based technology. Due to the system complexity, parameter sensitivity and environmental effect, noises can however easily occur in the digital image which can indicate low quality image and result in difficulty for interpretation. Therefore, a need of an application tool which can improve and evaluate the image is becoming an urgent task. Due to this fact, a novel interactive, comprehensive and user-friendly tool was developed which enable the digital image improve, analyze and automatically transfer to reporting. This tool was written by using image processing and guide toolbox in MATLAB which contains four main sections, namely: (1) Theoretical Background as Knowledge Pool, (2) Image Processing Method, (3) Image Quality Measurement Method and (4) Radiographic Inspection Report (RIR). This tool is potential to be used in manufacturing industry such as welding fabrication and casting process. High quality manufactured products can be achieved through appropriate inspection and record. Hence, defects can be traced easily through a proper database which encourages the industry sustaining high quality of products.

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