

UNIVERSITI TEKNOLOGI MARA

**H-MINIMA TRANSFORM ASSISTED
FEATURE CHARACTERIZATION
SYSTEM IN AREAL SURFACE
METROLOGY**

**NOR HIDAYAWATI BINTI MOHD
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MSc

July 2018

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Thesis submitted in fulfillment
of the requirements for the degree of
Master of Science

Faculty of Mechanical Engineering

July 2018

ABSTRACT

Feature parameter is used to characterize the surface texture according to international standard ISO 25178 part 2. The topography data must undergo segmentation prior to the characterization. However, Watershed segmentation could result in over-segmentation. A mechanism is required to eliminate over-segmentation and retain the necessary information for characterization. Thus, this research introduced the use of H-minima transform prior to the segmentation and eliminate the use of Wolf pruning. H-minima transform is introduced before Watershed segmentation carried out. It can suppresses all regional minima in topography surface, whose depth less than or equivalent to threshold value. Demonstration of system design was tested on simulated data. The validation of the system design was verified via feature counts and feature segmentation conditions. Threshold value of H-minima transform is depending on percentage of total surface height. It was different for various type of different surface. The range of the H-minima threshold value obtained to remove insignificant features between 5% and 20% of total surface height. The results showed that, feature characterization system is able to eliminate over-segmentation and extract significant features from the topography surface. This system design could be considered as a toolbox solution for feature characterization in surface metrology.

ACKNOWLEDGEMENT

I wish to acknowledge and express my gratitude and appreciation to my supervisor Dr. Mohd Fauzi Bin Ismail and my co-supervisor Prof. Madya Dr. Talib Bin Ria Jaafar. Thank you for the supervision, encouragement, suggestions and assistance towards this research.

I also would like to thanks to staff members of Metrology Laboratory, UiTM Shah Alam and UiTM Permatang Pauh, Penang, for the facilities and assistance during this research. It is pleasure to express my appreciation to my colleagues and friends for helping me throughout my study.

I am greatly acknowledge scholarship by MyBrains15, Ministry of Higher Education Malaysia for financial support for this research study.

Finally, I would like to thank to my parents, _____ and Madam _____ with constant encouragement and constantly gave moral support to educate me. When times were hard and stressful, they reminded me of my past and the previous struggles that I always overcome to continue moving forward. They always took the time to listen and always supported me in any possible way they could and for that, there are no words to express the magnitude of how truly grateful I am to have them. Thank you.

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