UNIVERSITI TEKNOLOGI MARA
CAWANGAN PULAU PINANG

RIVER SEGMENTATION WITH ATROUS CONVOLUTION VIA DEEPLABV3

NUR ADILAH BINTI HAMID

BACHELOR OF ENGINEERING (HONS) ELECTRICAL AND ELECTRONIC ENGINEERING

July 2020

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.

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

Name of Student	:	Nur Adilah Binti Hamid
Student I.D. No.	:	2017668654
Programme	:	Bachelor of Engineering (Hons) Electrical and Electronic Engineering – EE200
Faculty	:	Electrical Engineering
Thesis	:	River Segmentation with Atrous Convolution Via DeepLabv3
Signature of Student	:	Adilah ……..
Date	:	July 2020

ABSTRACT

Flood has been identified as a common issue for years. This is the evidence of the effect cause by heavy rainfall which then lead to damages of infrastructure and deaths. Not only that, the other causes like the structure of the drainage system and engineering are also contributed to flood. The presence of this natural disasters can cause a lot of problems and risk especially to human being. Thus, this shows that it is very important for this issue to be addressed. The prevention of flood is almost impossible as it is a natural phenomenon. In this work, we proposed a water segmentation technique in order to analyses the images of river in term of water at the area from the camera which will automatically detect anomalies such as sudden water increase. The Deep Learning segmentation algorithm DeepLabv3 and DeepLabv3+ are trained and tested for the task of water segmentation and the performances are compared with previous works. In our finding, the accuracy obtained by our proposed method DeepLabv3 is 97.07% thus achieved the state of art in performing the task of water segmentation. Thus, DeepLabv3 model is suit and practical in the solving the flood issue.

ACKNOWLEDGEMENT

I would like to express my gratitude and appreciation to my supervisor Encik Mohd Ikmal Fitri bin Maruzuki for his expert advice and encouragement as well as his brilliance in guiding me throughout this research.

Not to forget I would like to thank my friends and family for helping me in term of motivation support till the end of this study.

Finally, this thesis is dedicated to my supportive family and not to forget my very dear late father and my beloved mother for the vision and determination to educate me.

TABLE OF CONTENTS