SINGLE IMAGE SUPER RESOLUTION WITH WIDE ACTIVATION FOR MOBILE DEVICES

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Degree of Master of Science

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DECLARATION

I declare that this is my own work and this dissertation 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.

Name of the supervisor: Dr. Thanuja Ambegoda

Signature of the supervisor: Date :

ABSTRACT

Single Image Super Resolution (SISR) revolves around the task of reconstructing a high-resolution image from a single low-resolution image. Numerous applications of SISR range from surveillance & security, medical imaging to photographic utilities. Although there are ample SISR solutions, especially those which are deployed as cloud services, there's a scarcity of effective on-device mobile SISR solutions. Even the existing solutions are mostly limited to high end mobile devices and most of the time limited by device architecture. An effective SISR solution which can run on any mobile device would be extremely helpful to the community in this context and can help gain a number of benefits in an edge-computing point of view, including storage and transfer optimization for image content. This research primarily focuses on creating such a solution, specifically focusing on usage of on-device Wide Attention Networks (WDSR) for SISR. In addition, a performance comparison will be done with other CNN based models.

Keywords: Single Image Super Resolution (SISR), CNN, WDSR, Tensorflow Lite

ACKNOWLEDGEMENT

I would like to express my profound gratitude to my supervisor, Dr. Thanuja Ambegoda for his continuous support and guidance throughout the project. Without his advice on consistent planning and organization and the supportive feedback provided on each step, this work would have not been realized.

I would also like to extend my thanks to Dr. Surangika Ranathunga for pointing me in the right direction at the inception of the project idea and to Prof. Sanath Jayasena for the invaluable passion for research he instilled in me during the undergraduate years. Last, but not least, I would like to thank the Department of CSE, UoM for providing me with an opportunity to pursue this research path.