Developing Computational Image Segmentation Techniques for the Analysis of the Visual Properties of Dwelling Facades within a Streetscape
STATEMENT OF ORIGINALITY

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Chris Tucker
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Glossary of Terms

D Fractal Dimension calculated using the box-counting method
DCP Development Control Plan
HT Hough Transform
HTAA Hough Transform Accumulator Array
IHT Inverse Hough Transform
LC Line Count graph
LGA Local Government Area
LSA Line Strength Array
ML Manifold Learning
PA Polar Array
LEP Local Environment Plan
SEPP State Environmental Planning Policy
SVM Support Vector Machine

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Abstract

The relationship between new or proposed buildings and existing urban or suburban settings has, in the past two decades, become an increasingly contentious issue in architectural, planning and public policy forums. Unlike new buildings that are sited within the natural landscape, or those that are visually removed from the public eye, those structures that are added to dense urban and suburban spaces necessarily have a visual impact on neighbouring buildings and the resultant streetscape. The present dissertation is focussed on techniques for measuring the character of existing buildings in urban and suburban spaces as a means of supporting the quantitative assessment of building proposals. The dissertation initially reviews past developments in the field, before documenting the development and pilot testing of a series of computational approaches to the analysis of the visual qualities of buildings and neighbourhoods. The dissertation does not develop these approaches to the extent needed to apply them in practice, or test them in sufficient detail to provide clear evidence for their potential. Instead, the research provides information about the approaches, expected outcomes, preliminary data and discussion of the strengths and weaknesses of each method.