

**Full title of thesis:** A Highly Adaptable Model Based – Method for Colour Image Interpretation

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## **Abstract**

This Thesis presents a model-based interpretation of images that can vary greatly in appearance. Rather than seek characteristic landmarks to model objects we sample points at regular intervals on the boundary to model objects with a smooth boundary. A statistical model of form in the exponent domain of an extended superellipse is created using sampled points and appearance by sampling inside objects.

A colour Maximum Likelihood Ratio criterion (MLR) was used to detect cues to the location of potential pedestrians. The adaptability and specificity of this cue detector was evaluated using over 700 images. A True Positive Rate (TPR) of 0.95 and a False Positive Rate (FPR) of 0.20 were obtained. To detect objects with axes at various orientations a variant method using an interpolated colour MLR has been developed. This had a TPR of 0.94 and an FPR of 0.21 when tested over 700 images of pedestrians.

Interpretation was evaluated using over 220 video sequences (640 x 480 pixels per frame) and 1000 images of people alone and people associated with other objects. The objective was not so much to evaluate pedestrian detection but the precision and reliability of object delineation. More than 94% of pedestrians were correctly interpreted.