國立臺灣大學管理學院資訊管理學系

碩士論文計畫提案書

Department of Computer Science and Information Engineering

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Proposal for Master Thesis

影像中使用者感興趣區域偵測之資料集

A Benchmark for Region-of-Interest Detection in Images

黃文鴻

Wen-Hong Huang

指導教授：林永松博士

Advisor: Frank Yeong-Sung Lin, Ph.D.

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摘要

本論文提出了一影像中使用者感興趣區域 (region of interest) 偵測之資料集 (benchmark)。使用者感興趣區域偵測在許多應用中極為有用，過去雖然有許多使用者感興趣區域之自動偵測演算法被提出，然而由於缺乏公開資料集，這些方法往往只測試了各自的小量資料而難以互相比較。從其它領域可以發現，基於公開資料集的可重製實驗與該領域突飛猛進密切相關，因此本論文填補了此領域之不足，我們提出名為「Photoshoot」的遊戲來蒐集人們對於感興趣區域的標記，並以這些標記來建立資料集。透過這個遊戲，我們已蒐集大量使用者對於感興趣區域的標記，並結合這些資料成為使用者感興趣區域模型。我們利用這些模型來量化評估五個使用者感興趣區域偵測演算法，此資料集也可更進一步作為基於學習理論演算法的測試資料，因此使基於學習理論的偵測演算法成為可能。

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Abstract

This thesis presents a benchmark for region of interest (ROI) detection. ROI detection has many useful applications and many algorithms have been proposed to automatically detect ROIs. Unfortunately, due to the lack of benchmarks, these methods were often tested on small data sets that are not available to others, making fair comparisons of these methods difficult. Examples from many fields have shown that repeatable experiments using published benchmarks are crucial to the fast advancement of the fields. To fill the gap, this thesis presents our design for a collaborative game, called Photoshoot, to collect human ROI annotations for constructing an ROI benchmark. With this game, we have gathered a large number of annotations and fused them into aggregated ROI models. We use these models to evaluate five ROI detection algorithms quantitatively. Furthermore, by using the benchmark as training data, learning-based ROI detection algorithms become viable.

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