STELLINGEN

behorende bij het proefschrift

Automatic Video Segmentation Employing Object/Camera Modeling

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I

Since a segmentation system for natural video is based on various algorithms applying different mathematical techniques at the same time, such as optimization, clustering, or statistics, the main problem in segmentation is not the ultimate cleverness of any of these algorithms, but the complexity to combine them into a robust system.

Thesis Part I and Chapter 13.

II

Although coding people have adopted the projective motion model for sprite generation to cover rotational camera motion, it is surprising to see that it was not noticed that the model implicitly imposes a restriction on the maximum rotation angle between two frames.

See [122] and Chapter 6.

III

A desired segmentation result can be defined either explicitly by describing the object itself with application preknowledge, or it can be found as the difference to a background model that is usually extracted from the input itself. The shorter the input sequence, the more preknowledge should be added to the object model, in order to compensate for the reduced amount of information obtained from the input data.

Chapters 5 and 7 on background models versus Chapters 9 and 10 on object models.

IV

While most people work on optimizing optimization algorithms, it is often possible and more successful to optimize the optimization goal.

For example, Chapter 14, where the observation angle is redefined to improve the convergence behaviour.

V

Whenever content analysis is used in order to raise the level of semantic understanding of the input data, the user should be aware that the analysis will partly fail in finding the correct semantics. In this aspect, the robustness of the analysis can only be increased by further constraining the application domain.

Chapter 8 and Chapter 13.

VI

The accuracy of analysis is typically increased by including more model knowledge and more advanced processing techniques, but it can be more effective to simply adopt a more suitable input sensor.

E.g., using radar instead of computer vision for measuring the distance to close vehicles.

VII

The most insightful ideas for image understanding can be obtained when one is fooled by the human visual system, as this is the unique moment in which unconscious processes become visible.

VIII

Many algorithms feature the adjustability of a plurality of algorithm parameters (e.g., thresholds) for adapting to varying input conditions. However, well-designed algorithms should either apply parameters that are derived from measurable input properties, or the setting should be non-critical within a wide range, independent of the input.

At best, any well-designed program code should be based only on fundamental constants and the numbers 0 (for initializations), 1 (for iterations), and 2 (for decisions).

IX

Commercial software is of inherently lower quality than comparable open-source software, because it is developed by people who are paid for writing software, instead of people who are fascinated about finding the best solution.

X

While mathematics is the art of denoting different things with the same name, research funding can be raised more easily by giving new names to existing concepts.

Extending a quote of Jules Henri Poincaré.

XI

The query-by-humming algorithms are a nice tool to search music databases, but it has not been solved yet how one should hum the Scriabin sonatas.

XII

In computer graphics and electronic music, we should not strive to imitate the real, but instead explore the creation of new forms of art.

XIII

The Dutch lunchrooms show that the food supply may be optimized with respect to preparation time or walking distance, but they also show that more subjective properties, like taste, are not so easy to integrate into the optimization.

XIV

Noticing that you do not miss something can be more worrying than actually missing it.