

INTERPRETATION MODELS AND REASONING STRATEGIES IN SCENE ANALYSIS

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ABSTRACT

The presentation begins with a brief overview of reasoning strategies, ranging from simple constructs to more sophisticated inference schemes. This is followed by a discussion of how reasoning fits in to the vision paradigm. Next, basic assumptions are discussed, including the fact that input data like digital imagery for solving vision tasks--- or photogrammetric problems for that matter---are incomplete and ambiguous. Therefore, only inferences can be drawn, not deductions. I also believe that the (automatic) solution of photogrammetric problems does not permit shortcuts. For example, an interpreted aerial scene cannot be obtained in one single step from the digital image. Rather, several processes are involved which result into increasingly more abstract representations. Inference methods must deal with knowledge and information derived from the input data. Ultimately, the data driven processes must be supported (guided) by domain specific knowledge.

The second part of the presentation will focus on abductive inference and its application to recognizing objects in aerial scenes. After a brief overview and the motivation for using abduction, specifications of a system under development are discussed. The presentation ends with conclusions, including a brief discussion of numeric vs. symbolic reasoning.

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ABSTRACT

The presentation begins with a brief overview of reasoning strategies, ranging from simple constructs to more sophisticated inference schemes. This is followed by a discussion of how reasoning fits in to the vision paradigm. Next, basic assumptions are discussed, including the fact that input data like digital imagery for solving visual problems or photogrammetric problems for the analysis of landscapes and buildings. Inference can be drawn, not deductions. It is pointed out that the construction of photogrammetric problems does not permit shortcuts. For example, an interested aerial scene cannot be obtained in one single step from the digital image. Rather, several processes are involved which result into increasingly more abstract representations. Inference methods must deal with knowledge and information derived from the input data. Ultimately, the data driven processes must be supported, guided, by domain specific knowledge. Knowledge in aerial images: segmenting, labeling, and representing. Representation and Spatial Reasoning. M. Lang, C. Schröder. The proceedings of the workshop on aerial image analysis and interpretation. Advances in Computer Vision and Machine Intelligence, Plenum, 1990.

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