

Preface

Among the myriad algorithms and techniques that constitute the field of computer vision, this work focuses on just one: the LSD algorithm for line segment detection in digital images. The interest in this algorithm is twofold: First, due to its relative simplicity, the method can be understood in full detail and provides a complete example of a low-level image analysis algorithm. Second, the method is based on the *a contrario* approach and it illustrates well the kind of parameterless algorithms of this family. In practice, the method produces fairly good results, comparable to the state-of-the-art methods and without human intervention. The reader is invited to try out the online demo of the algorithm on new images and to explore the companion archive of experiments, both of them available at the IPOL journal's website [36]. A good experiment is worth a thousand words.

The introductory chapter (Chap. 1) presents the general principles underlying the design of the algorithm. Chapter 2 briefly introduces the *a contrario* approach and then concentrates on the application of this framework to the problem of line segment detection. The LSD algorithm is described in Chap. 3 and its behavior is discussed in Chap. 4. The final chapter (Chap. 5) considers the limitations of the method and points to the possible improvements and extensions.

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