

Foreword

“To Be — or not to Be: That is the question!”

This famous quote from 450 years old William Shakespeare from “The Tragical Historie of Hamlet, Prince of Denmarke” (Act III, Scene I) is still vivid and vital and has not lost any of its power and magic. In fact, it can also be read as one of the most beautiful and charming descriptions of the art of segmentation: It manifests two antagonistic states and raises the fundamental question of how to distinguish these states. The ability to differentiate between good and bad or important and irrelevant is key in all matters of life.

The art of segmentation is central for medical imaging, where an exponential growth of imaging modalities and images can be observed. On the one hand, this information is very important and supports clinicians in diagnoses and treatment validation. On the other hand, simply the immense amount of data overwhelms the abilities of trained experts as well as the capacities of the health systems. Automated procedures may present a remedy to this dilemma.

In this wonderful and enjoyable book, Dagmar Kainmüller addresses automatic segmentation of medical images and contributes significantly to the art of segmentation. On the basis of statistical shape models, Dagmar develops new tools which overcome many of the drawbacks of current state alternatives. Remarkable and price-awarded contributions of Dagmar are the introduction of ODDS (Omnidirectional Displacements for Deformable Surfaces) and mesh coupling for multi-object segmentation, to name just two. Most importantly, Dagmar presents solutions to real-life applications such as liver segmentation and hip and knee segmentation.

Many more treasures lie in Dagmar’s book and certainly deserve an extended acknowledgement, but I like to keep the reader curious and conclude with another quote of William Shakespeare from “King Henry the Fifth” (Act III, Scene II):

“Men of few words are the best men.”

Prof. Dr. Jan Modersitzki

Institute of Mathematics and Image Computing, University of Lübeck, Germany
Fraunhofer MEVIS Project Group Image Registration, Lübeck

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Accurate Automatic Segmentation of Anatomical
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