

Preface

Modern methods of image analysis and processing are becoming more pervasive, both in private and professional life. They cover virtually every aspect of life, from industrial automation systems through building and energy industry to medicine. Medicine is also currently experiencing a boom thanks to the spread of modern equipment and electronics as well as systems of image analysis providing new quantitative diagnostic quality. One such area of medicine where an interdisciplinary approach (of an engineer and a physician) is necessary is thermal imaging, which, although known for many decades, has not been computer-assisted in any way. The use of advanced processing in thermal imaging provides quantitative data on temperature distribution and its changes in an automatically or manually separated area. In addition, modern processing methods enable to track objects and thereby stabilize their position in the scene. This monograph is therefore intended for students of biomedical engineering (provided that its price is not an obstacle), graduate students, and researchers dealing with interdisciplinary issues related to engineering and medicine. This monograph may also be of interest to IT specialists working in MATLAB^{®1} in the field of image analysis and processing as well as doctors who want to expand their knowledge on modern diagnostic methods. Finally, operators and retailers of infrared cameras interested in the possibilities and limitations of acquired image processing methods may find this monograph useful. An open-source code allows for any application of the presented methods as well as their modification and expansion. To ensure the reliability of the monograph recommendations for particular groups of readers, it should be also mentioned what aspects are particularly highlighted. Readers will not find here the history of thermal imaging, clinical results, or summary of infrared camera types. The monograph primarily attempts to show the author's individual approach to thermal image analysis and processing.

Sosnowiec, Poland

Robert Koprowski

¹The word "MATLAB" will be used further in this book for simplification reasons

Processing Medical Thermal Images

Using Matlab®

Koprowski, R.

2018, XIX, 145 p. 77 illus., 65 illus. in color., Hardcover

ISBN: 978-3-319-61339-0