1. Record Nr. UNINA9910337571303321

Autore	Zhang Jianming (Research scientist)
Titolo	Visual Saliency: From Pixel-Level to Object-Level Analysis / / by Jianming Zhang, Filip Malmberg, Stan Sclaroff
Pubbl/distr/stampa	Cham : , : Springer International Publishing : , : Imprint : Springer, , 2019
ISBN	3-030-04831-4
Edizione	[1st ed. 2019.]
Descrizione fisica	1 online resource (138 pages)
Disciplina	621.367 006.42
Soggetti	Optical data processing Signal processing Image processing Speech processing systems Computer science - Mathematics Image Processing and Computer Vision Signal, Image and Speech Processing Mathematics of Computing
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Nota di contenuto	1 Overview -- 2 Boolean Map Saliency: A Surprisingly Simple Method -- 3 A Distance Transform Perspective -- 4 Efficient Distance Transform for Salient Region Detection -- 5 Salient Object Subitizing -- 6 Unconstrained Salient Object Detection -- 7 Conclusion and Future Work.
Sommario/riassunto	This book provides an introduction to recent advances in theory, algorithms and application of Boolean map distance for image processing. Applications include modeling what humans find salient or prominent in an image, and then using this for guiding smart image cropping, selective image filtering, image segmentation, image matting, etc. In this book, the authors present methods for both traditional and emerging saliency computation tasks, ranging from classical low-level tasks like pixel-level saliency detection to object-level tasks such as subitizing and salient object detection. For low-level

tasks, the authors focus on pixel-level image processing approaches based on efficient distance transform. For object-level tasks, the authors propose data-driven methods using deep convolutional neural networks. The book includes both empirical and theoretical studies, together with implementation details of the proposed methods. Below are the key features for different types of readers. For computer vision and image processing practitioners: Efficient algorithms based on image distance transforms for two pixel-level saliency tasks; Promising deep learning techniques for two novel object-level saliency tasks; Deep neural network model pre-training with synthetic data; Thorough deep model analysis including useful visualization techniques and generalization tests; Fully reproducible with code, models and datasets available. For researchers interested in the intersection between digital topological theories and computer vision problems: Summary of theoretic findings and analysis of Boolean map distance; Theoretic algorithmic analysis; Applications in salient object detection and eye fixation prediction. Students majoring in image processing, machine learning and computer vision: This book provides up-to-date supplementary reading material for course topics like connectivity based image processing, deep learning for image processing; Some easy-to-implement algorithms for course projects with data provided (as links in the book); Hands-on programming exercises in digital topology and deep learning.