

## **Some Recent Developments in Image Segmentation**

**Li Chen**

Department of Computer Science and Information Technology  
University of the District of Columbia  
Washington, DC 20008, USA  
[lchen@udc.edu](mailto:lchen@udc.edu)

### **Abstract**

Image segmentation is always at the center of image processing and computer vision. In this presentation, we will first overview some popular methods for image segmentation as well as some profound techniques. We also discuss the recent development of these methods for BigData and data science. Image segmentation usually means to automatically partition an image into sub-images or objects as meaningful pieces. Even though there are very many successful methods for image segmentation, no individual technique can treat every problem in the real world and no relatively unified theory was found for general segmentation problems. The image segmentation will be remaining to be the challenge problem for data processing in the future. In the nowadays, the BigData technology has some advantages in searching and deep learning computationally, especially for real-time object tracking. Some of them have been used in image segmentation. At the last, we will provide several research topics that are worthy to explore for young investigators.

### **Keywords**

Image segmentation, image processing, computer vision, data science, BigData.

### **Biographies**

**Li Chen** is currently an associate professor of computer science and information technology at the University of the District of Columbia. He received his BS, MS, and PhD in CS from Wuhan University (1982), Utah State University (1995), and the University of Bedfordshire (2001), respectively. Chen's research interests are broad in computer science and applied mathematics and include applied algorithm design, digital and discrete geometry, image processing, and applications to data science. He has made contributions to several research areas of computer science and its applications including: (1) lambda-connected image segmentation methods, (2) fuzzy relation equations, (3) the digital form of the Gauss-Bonnet theorem, (4) the polynomial time algorithm for finite Abelian group decomposition, (5) the definition of digital manifolds and classification of 3D digital surfaces, and (6) the optimum algorithm for the check matrix of the optimal SEC-DED code (optimal Hamming code). In 2014, Chen chaired the Satellite Conference on Data Science of International Congress of Mathematicians (ICM14). He is the co-author of the book entitled Digital and Discrete Geometry published by Springer in 2014.