

Medical Image Cryptography Using Chaotic Methods: an study

Chin-Feng Lin *, *Member IEEE*, and Yan-Xuan Lin **

* *Department of Electrical Engineering, National Taiwan Ocean University, Keelung 20224, Taiwan;*

***School of Medicine, Chung Shan Medical University, Taichung 402307, Taiwan;*

* lcf1024@mail.ntou.edu.tw; ** 1201106@live.csmu.edu.tw

Abstract—The expansion of medical encryption systems, and chaotic medical image cryptography (CRY) become an important research area in advanced encryption strategies. Chaotic medical image CRY technology can be used in cloud-based medical systems, health care systems, telemedicine, and telehealth. However, limited literature on chaotic medical image CRY is available at present. This study focuses on several basic frameworks for chaos-based medical image encryption. The major technical features and effectiveness of chaos-based encryption methods are investigated. The chaotic maps of chaos-based medical image CRY are illustrated, and security evaluation methods for chaos-based medical image CRY are explored. By revealing the basic principles of chaos-based medical image CRY, this study can inspire innovative design methods in this field.

Keyword—medical image, chaotic, cryptography, health care, telemedicine.

Dr. Chin-Feng Lin was born in Taiwan, in 1974. He received the Ph.D. degrees in Communication Engineering from National Chiao Tung University, Taiwan, in 2002. Afterwards, he served as an assistant professor and has been an associate professor since 2004 in the Department of Electrical Engineering at National Taiwan Ocean University, Taiwan. He has been published 30 SCI journal papers, one English online book, 6 English book chapters, 2 Chinese books, 9 Taiwan patents, and 92 conference papers. His research interests include mobile telemedicine, biomedical signal processing, and underwater multimedia communication.

Yan-Xuan Lin was born in Taiwan, in 2005. She is an undergrad since 2023 in the School of Medicine at Chung Shan University, Taiwan. Her research interests include biomedical signal processing, and mobile telemedicine.