



## Artificial Intelligence and Computer Vision

Editors ([view affiliations](#))

Huimin Lu, Yujie Li

Book



Part of the [Studies in Computational Intelligence](#) book series (SCI, volume 672)

Log in to check access

Buy eBook

EUR 117.69

- Instant download
- Readable on all devices
- Own it forever
- Local sales tax included if applicable

Buy Physical Book 

[Learn about institutional subscriptions](#)

Table of contents (11 chapters)

About this book

Search within book

Front Matter

PDF 

Pages i-x

[Computer Vision for Ocean Observing](#)

Huimin Lu, Yujie Li, Seiichi Serikawa

Pages 1-16

[Fault Diagnosis and Classification of Mine Motor Based on RS and SVM](#)

Xianmin Ma, Xing Zhang, Zhanshe Yang

Pages 17-30

[Particle Swarm Optimization Based Image Enhancement of Visual Cryptography Shares](#)

M. Mary Shanthi Rani, G. Germin Mary

Pages 31-49

# Particle Swarm Optimization Based Image Enhancement of Visual Cryptography Shares

M. Mary Shanthi Rani and G. Germin Mary

**Abstract** Due to the rapid growth of digital communication and multimedia applications, security becomes an important issue of communication and storage of images. Visual Cryptography is used to hide information in images; a special encryption technique where encrypted image can be decrypted by the human visual system. Due to pixel expansion the resolution of the decrypted image diminishes. The visual perception of a decrypted image can be enhanced by subjecting the VC shares to Particle Swarm Optimization based image enhancement technique. This improves the quality and sharpness of the image considerably. Suitable fitness function can be applied to optimize problems of large dimensions producing quality solutions rapidly. Results of the proposed technique are compared with other recent image enhancement techniques to prove its effectiveness qualitatively and quantitatively. The proposed algorithm guarantees highly safe, secure, quick and quality transmission of the secret image with no mathematical operation needed to reveal the secret.

**Keywords** Image enhancement • Particle swarm optimization • Image transmission • Visual cryptography • Information security • Secret sharing

## 1 Introduction

Information is the oxygen of the modern age. Valuing and protecting information are crucial tasks for the modern organization. In many applications information is sent in the form of images, as it requires less space and transmits more information. Due to the rapid growth of digital communication and multimedia applications,

---

M.M.S. Rani

Department of Computer Science and Applications,  
Gandhigram Rural Institute—Deemed University, Dindigul, Tamil Nadu, India  
e-mail: drmaryshanthi@gmail.com

G.G. Mary (✉)

Department of Computer Science, Fatima College, Madurai, Tamil Nadu, India  
e-mail: germinemary@yahoo.co.in