



*Frontiers of  
Information  
Technology &  
Electronic  
Engineering*

**Editors-in-Chief**

Yunhe PAN  
Xicheng LU

**Administrated by**

Chinese Academy of Engineering

**Sponsored by**

Chinese Academy of Engineering  
& Zhejiang University

**Published by**

Zhejiang University Press

**Edited by**

Editorial Office of *Journal of  
Zhejiang University-SCIENCE A/B  
& FITEE*

**Printed by**

Hangzhou Shengyuan Printing  
Services Co., Ltd.

**Publication Date**

1st Week per Month

**Subscription**

Zhejiang University Press  
Postal distributing code: 32-324

**Contact**

Zhejiang University Press,  
148 Tianmushan Road,  
Hangzhou 310028, China  
Tel: +86-571-88273162  
Email: fitee@zju.edu.cn

**Price (Domestic)**

160 CNY/Issue

**ISSN 2095-9184**  
**CN 33-1389/TP**

# CONTENTS

## Special Column on Visual Knowledge

(Hosted by Profs. Yunhe PAN & Yueting ZHUANG)

### Perspectives

- 1287 On visual understanding  
Yunhe PAN
- 1290 Three-dimensional shape space learning for visual concept  
construction: challenges and research progress  
Xin TONG

### Position Paper

- 1298 On the principles of Parsimony and Self-consistency for the  
emergence of intelligence  
Yi MA, Doris TSAO, Heung-Yeung SHUM

### Research Article

- 1324 Visual recognition of cardiac pathology based on 3D parametric  
model reconstruction  
Jinxiao XIAO, Yansong LI, Yun TIAN, Dongrong XU, Penghui LI,  
Shifeng ZHAO, Yunhe PAN

### Regular Papers

#### Research Articles

- 1338 A novel grey wolf optimizer and its applications in 5G frequency  
selection surface design  
Zhihao HE, Gang JIN, Yingjun WANG
- 1354 A power resource dispatching framework with a privacy protection  
function in the Power Internet of Things  
Shuanggen LIU, Shuangzi ZHENG, Wenbo ZHANG, Runsheng FU
- 1369 Certificateless broadcast multi-signature for network coding  
Huifang YU, Zhewei QI

- 1378 Machine learning based altitude-dependent empirical LoS probability model for air-to-ground communications  
Minghui PANG, Qiuming ZHU, Zhipeng LIN, Fei BAI, Yue TIAN, Zhuo LI, Xiaomin CHEN
- 1390 Competitive binary multi-objective grey wolf optimizer for fast compact antenna topology optimization  
Jian DONG, Xia YUAN, Meng WANG
- 1407 Phase synchronization and energy balance between neurons  
Ying XIE, Zhao YAO, Jun MA



*Frontiers of  
Information  
Technology &  
Electronic  
Engineering*