

# Proceedings OF THE IEEE

## A Survey of Deep Learning on Mobile Devices: Applications, Optimizations, Challenges, and Research Opportunities

Wearable Photoplethysmography for Cardiovascular Monitoring

Synchronous Reluctance Machines:  
A Comprehensive Review and Technology Comparison

Point of View: Electrification, Decarbonization,  
and the Future Carbon-Free Grid:  
The Role of Energy Storage in the  
Electric Grid Infrastructure





## REGULAR PAPERS ISSUE

### 334 A Survey of Deep Learning on Mobile Devices: Applications, Optimizations, Challenges, and Research Opportunities

By T. Zhao, Y. Xie, Y. Wang, J. Cheng, X. Guo, B. Hu, and Y. Chen

**| CONTRIBUTED PAPER |** This article surveys the state-of-the-art literature that focuses on deep learning optimization for mobile applications and devices.

### 355 Wearable Photoplethysmography for Cardiovascular Monitoring

By P. H. Charlton, P. A. Kyriacou, J. Mant, V. Marozas, P. Chowienczyk, and J. Alastruey

**| CONTRIBUTED PAPER |** This article summarizes the key literature on wearable photoplethysmography and points to future directions in this field.

### 382 Synchronous Reluctance Machines: A Comprehensive Review and Technology Comparison

By M. Murataliyev, M. Degano, M. Di Nardo, N. Bianchi, and C. Gerada

**| CONTRIBUTED PAPER |** This article reviews the promising synchronous reluctance machine technology, covering its background and evolution, as well as the latest developments in the field.

## DEPARTMENTS

### 322 SCANNING THE ISSUE

### 324 POINT OF VIEW

**Electrification, Decarbonization, and the Future Carbon-Free Grid: The Role of Energy Storage in the Electric Grid Infrastructure**  
R. Masiello, R. Fioravanti, B. Chalamala, and H. Passell

### 400 FUTURE SPECIAL ISSUE/SPECIAL SECTIONS

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### On the Cover:

Our cover image this month is a nod to the topic of deep learning techniques used on powerful mobile devices, which is a growing trend in recent years.