



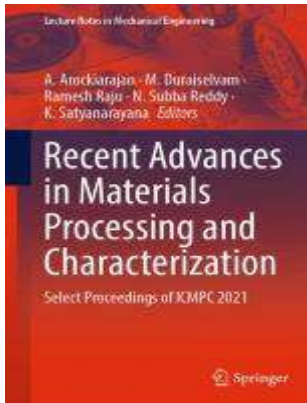
# Central Library

## Amaravati Campus

**New Arrivals**  
**(Books and Journals)**

**May 2024**

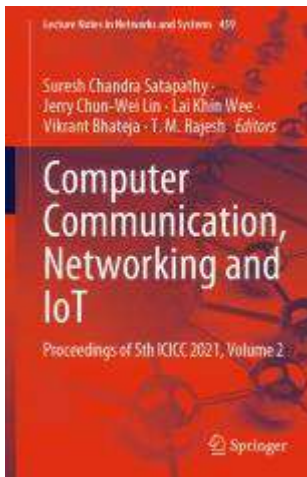
## Books



Recent Advances in Materials Processing and Characterization : Select Proceedings of ICMPC 2021 / A. Arockiarajan, M. Duraiselvam, 2023

E-Book

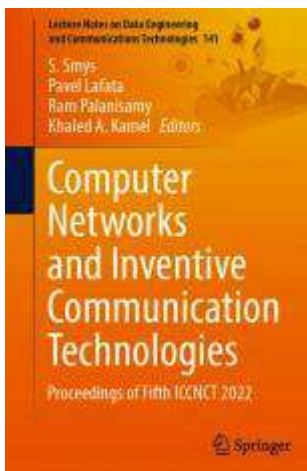
<https://link.springer.com/book/10.1007/978-981-19-5347-7>



Computer Communication, Networking and IoT : Proceedings of 5th ICICC 2021, Vol. 2 / Suresh Chandra Satapathy, Jerry Chun-Wei Lin, 2023

E-Book

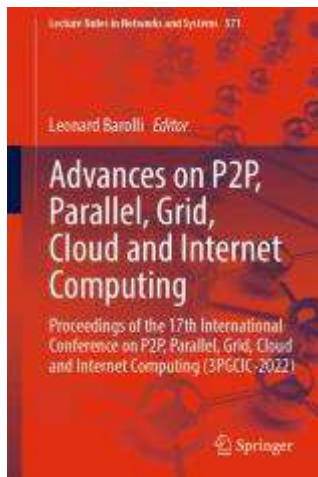
<https://link.springer.com/book/10.1007/978-981-19-1976-3>



Computer Networks and Inventive Communication Technologies : Proceedings of Fifth ICCNCT 2022 / S. Smys, Pavel Lafata, 2023

E-Book

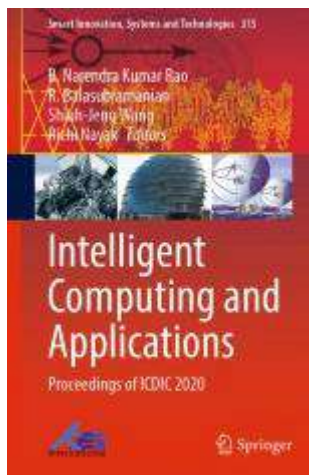
<https://link.springer.com/book/10.1007/978-981-19-3035-5>



Advances on P2P, Parallel, Grid, Cloud and Internet Computing : (3PGCIC-2022)  
/ Leonard Barolli, 2023

E-Book

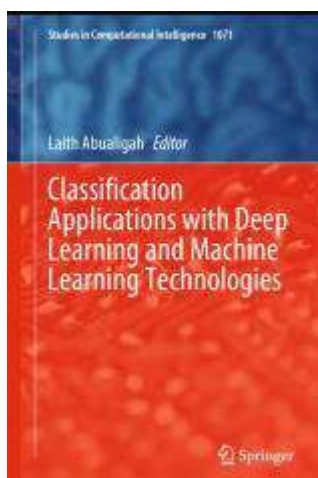
<https://link.springer.com/book/10.1007/978-3-031-19945-5>



Intelligent Computing and Applications :  
Proceedings of ICDIC 2020 / B. Narendra Kumar Rao, R. Balasubramanian, 2023

E-Book

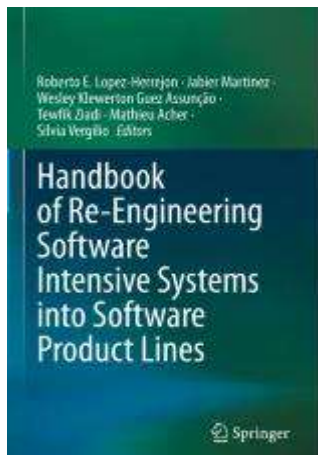
<https://link.springer.com/book/10.1007/978-981-19-4162-7>



Classification Applications with Deep Learning and Machine Learning Technologies / Laith Abualigah, 2023

E-Book

<https://link.springer.com/book/10.1007/978-3-031-17576-3>



Handbook of Re-Engineering Software Intensive Systems into Software Product Lines / Roberto E. Lopez-Herrejon, Jabier Martinez, 2023

E-Book

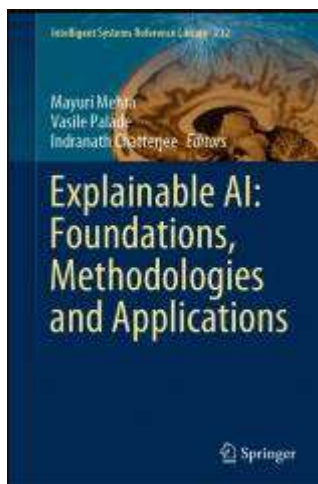
<https://link.springer.com/book/10.1007/978-3-031-11686-5>



Computer and Information Science / Roger Lee, 2023

E-Book

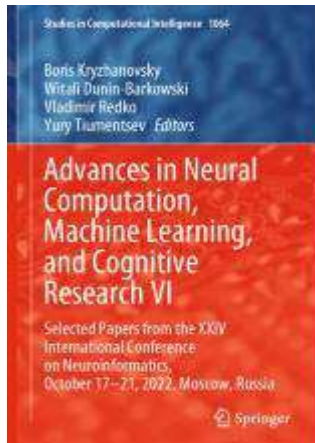
<https://link.springer.com/book/10.1007/978-3-031-12127-2>



Explainable AI: Foundations, Methodologies and Applications / Mayuri Mehta, Vasile Palade, 2023

E-Book

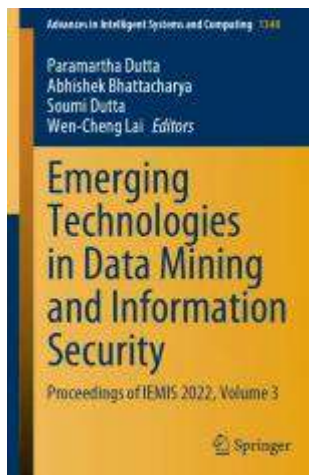
<https://link.springer.com/book/10.1007/978-3-031-12807-3>



Advances in Neural Computation, Machine Learning, and Cognitive Research VI / Boris Kryzhanovsky, Witali Dunin-Barkowski, 2023

E-Book

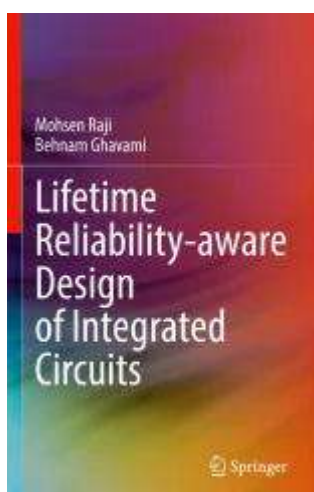
<https://link.springer.com/book/10.1007/978-3-031-19032-2>



Emerging Technologies in Data Mining and Information Security : Proceedings of IEMIS 2022, Volume 3 / Paramartha Dutta, Abhishek Bhattacharya, 2023

E-Book

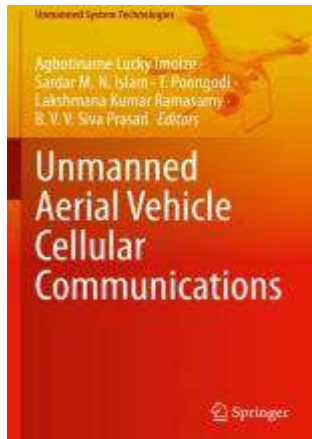
<https://link.springer.com/book/10.1007/978-981-19-4676-9>



Lifetime Reliability-aware Design of Integrated Circuits / Mohsen Raji , Behnam Ghavami, 2023

E-Book

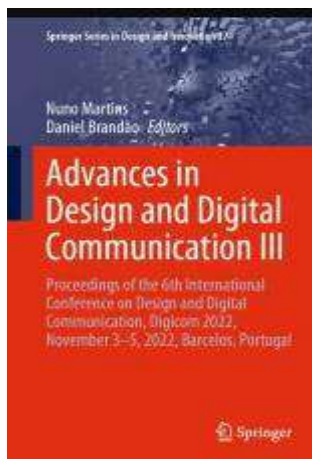
<https://link.springer.com/book/10.1007/978-3-031-15345-7>



Unmanned Aerial Vehicle Cellular Communications / Agbotiname Lucky Imoize, Sardar M. N. Islam, 2023

E-Book

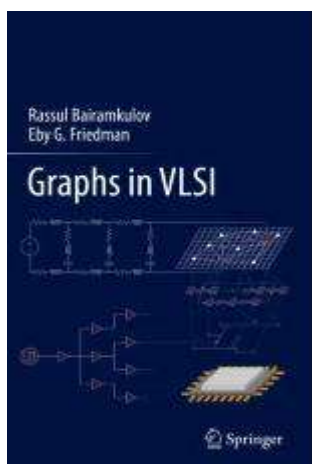
<https://link.springer.com/book/10.1007/978-3-031-08395-2>



Advances in Design and Digital Communication III : Proceedings of the 6th Inter. Conference on Digicom 2022, Nov 3–5, 2022, Barcelos, Portugal /, 2023

E-Book

<https://link.springer.com/book/10.1007/978-3-031-20364-0>

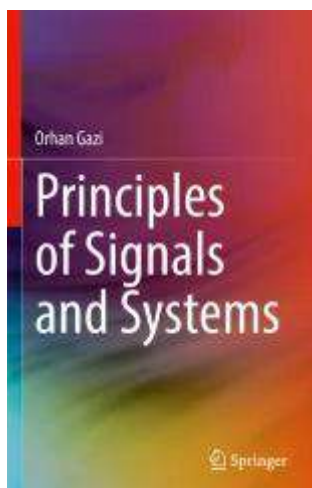


Graphs in VLSI / Rassul Bairamkulov , Eby G. Friedman, 2023

E-Book

<https://link.springer.com/book/10.1007/978-3-031-11047-4>

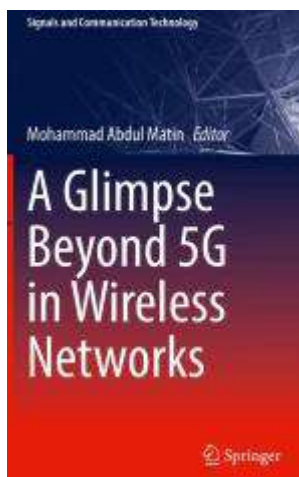




Principles of Signals and Systems /  
Orhan Gazi, 2023

E-Book

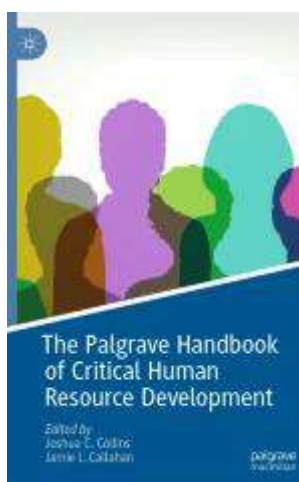
<https://link.springer.com/book/10.1007/978-3-031-17789-7>



A Glimpse Beyond 5G in Wireless Networks /  
Mohammad Abdul Matin, 2023

E-Book

<https://link.springer.com/book/10.1007/978-3-031-13786-0>



The Palgrave Handbook of Critical Human  
Resource Development / Joshua C. Collins,  
Jamie L. Callahan, 2023

E-Book

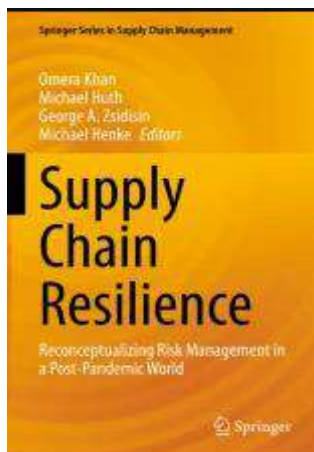
<https://link.springer.com/book/10.1007/978-3-031-10453-4>



Business and Management in Asia: Digital Innovation and Sustainability / Tobias Endress, Yuosre F. Badir, 2023

E-Book

<https://link.springer.com/book/10.1007/978-981-19-6418-3>



Supply Chain Resilience : Reconceptualizing Risk Management in a Post-Pandemic World / Omera Khan, Michael Huth, 2023

E-Book

<https://link.springer.com/book/10.1007/978-3-031-16489-7>

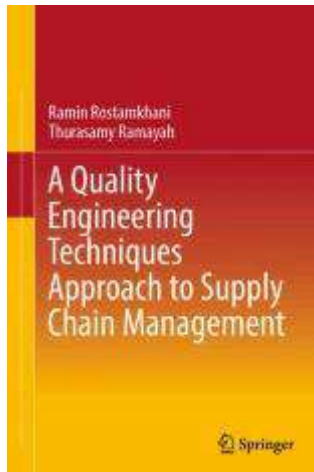


Sustainable Digital Transformation : Paving the Way Towards Smart Organizations and Societies / Stefano Za, Robert Winter, 2023

E-Book

<https://link.springer.com/book/10.1007/978-3-031-15770-7>





A Quality Engineering Techniques Approach to Supply Chain Management / Ramin Rostamkhani , Thurasamy Ramayah, 2023

E-Book

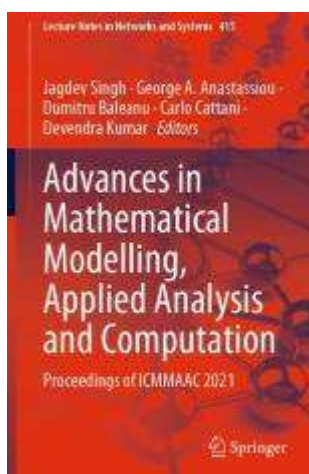
<https://link.springer.com/book/10.1007/978-981-19-6837-2>



Knowledge in Servitization Management : A Comparative View / H. M. Belal , Kunio Shirahada, 2023

E-Book

<https://link.springer.com/book/10.1007/978-3-031-18687-5>



Advances in Mathematical Modelling, Applied Analysis and Computation : Proceedings of ICMMAAC 2021 / Jagdev Singh, George A. Anastassiou, 2023

E-Book

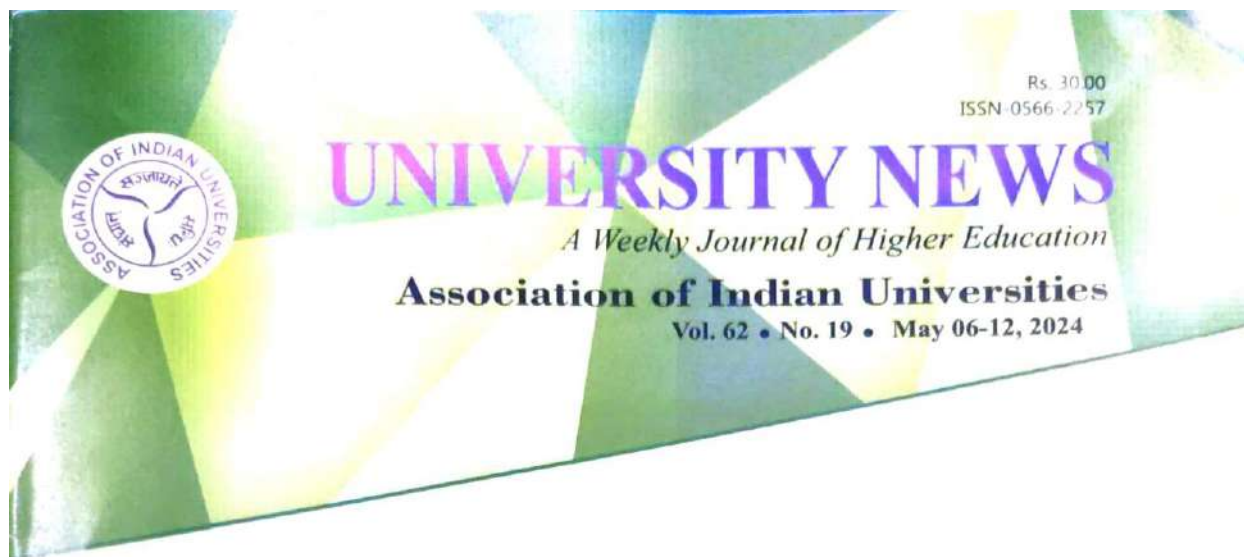
<https://link.springer.com/book/10.1007/978-981-19-0179-9>

# Journals and Magazines

University News

Vol.62 Issue.19

Table of Contents



**R Jaishanker**

Dipole and Academic Club Models to Improve Quality of Education

**Arvind Kumar Agrawal and Ram Lal Bagaria**

Salvaging Lost Cultural Heritage and Pride: The Indian Knowledge Systems

**Manoj Kumar Saxena and Vikram Bajotra**

Artificial Intelligence at the Crossroads: Some Ethical Considerations

**Arun Dubey**

Stepping into 2047 with Good Health and Sound Mind: Making Best Use of Indian Classical Music and *Naad Yoga*

**Pramod Kumar Mishra**

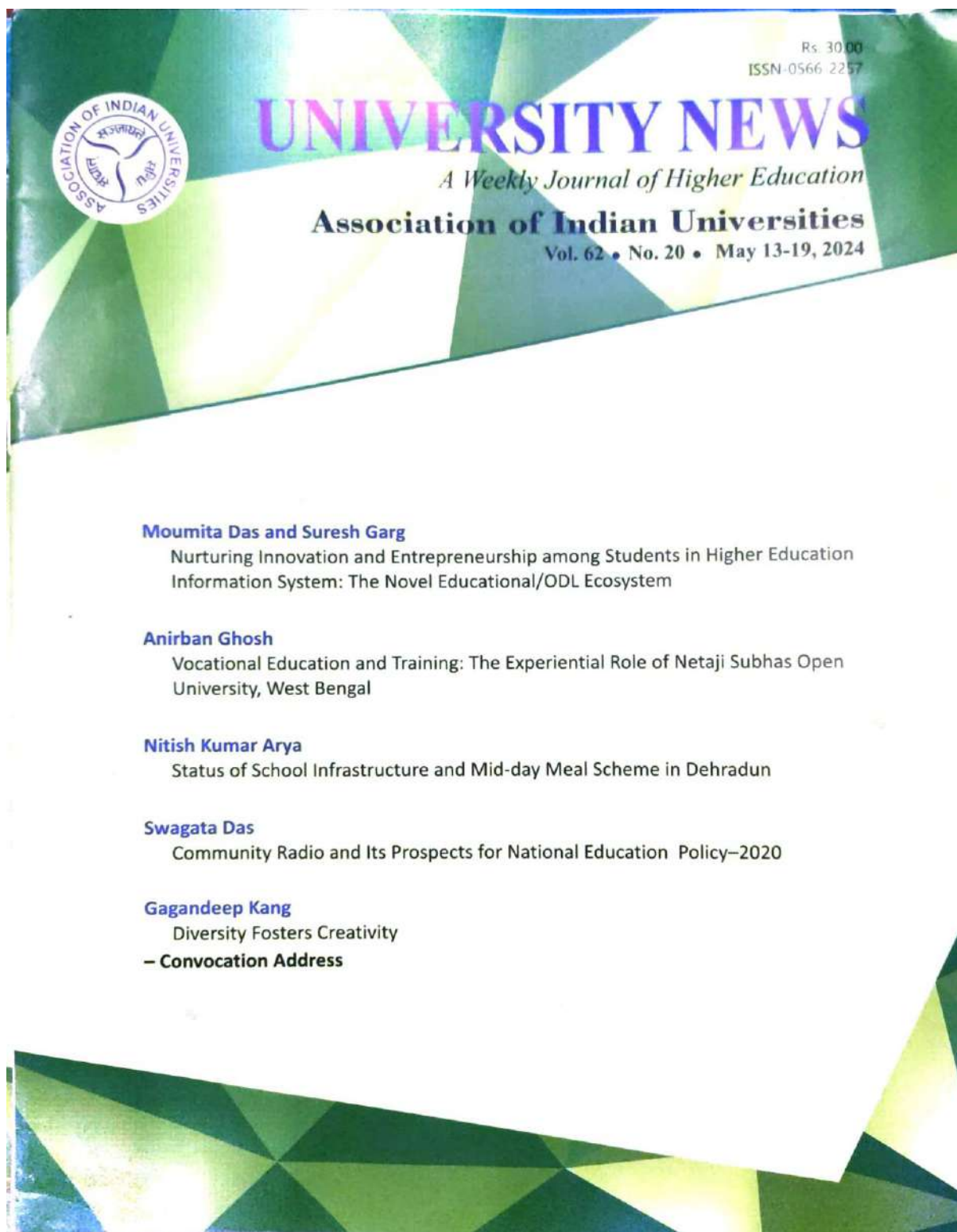
Working for a *Viksit Bharat*

– Convocation Address

## University News

Vol.62 No.20

### Table of Contents



**Moumita Das and Suresh Garg**

Nurturing Innovation and Entrepreneurship among Students in Higher Education  
Information System: The Novel Educational/ODL Ecosystem

**Anirban Ghosh**

Vocational Education and Training: The Experiential Role of Netaji Subhas Open  
University, West Bengal

**Nitish Kumar Arya**

Status of School Infrastructure and Mid-day Meal Scheme in Dehradun

**Swagata Das**

Community Radio and Its Prospects for National Education Policy–2020

**Gagandeep Kang**

Diversity Fosters Creativity

– Convocation Address

## University News

Vol.62 No.21

### Table of Contents





## University News

Vol.62 No.22

### Table of Contents



**M Sen Gupta**

Education as a Tool for Transformation and Holistic Development

**Atul Krishna Ghadge**

Beyond the Lecture Hall: Harnessing Technology for Enhanced Learning in Higher Education

**Prasenjit Das and Pranab Barman**

Blended Learning: The Future of Indian Higher Education through the Lens of National Education Policy-2020

**Sumit Sao and Rashmi Shrivastava**

Quality Enhancement in Higher Education through Scholarships in the Lens of National Education Policy-2020

**G Sathesh Reddy**

Make Innovation Your *Mantra*

– Convocation Address

**Apeksha Shrivastava**

Creative Commons: A Cure for Today's Creators

– Student Column

**Digit**

**Vol.24 No.05**

**Table of Contents**

# CONTENTS

**digit**

MAY 2024 • VOLUME 24 • ISSUE 05



**COVER FEATURE**

## Reboot yourself

Almost halfway into 2024, we think it is time to take a step back and get some tech detox done!

### UPDATE

#### 10 | Hardware

New launches, new models, new gadgets... all covered here!

#### 12 | Services

What are service providing companies up to?

#### 14 | Sk[AI]net

A whole new section in the magazine dedicated to the latest news from the world of AI

### TEST

#### 19 | Tested

The latest and greatest gadgets tested by our in-house experts

#### 46 | Experience

Our resident expert, Jayesh shares his month-long detox journey with the reMarkable 2

#### 48 | Digit Diary

Shenanigans as they unfold at Digit offices in Mumbai and Noida.

### R&D

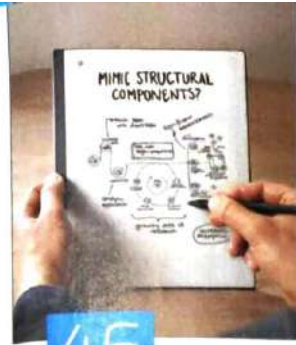
#### 60 | Insight

We spoke to the top brass from BOULT, Qualcomm, and Lenovo to better understand their strategy in India and more!

#### 66 | Tomorrow

Take a deep dive into the future of laptops and get to know about the applications of AI-powered laptops in academics and how they might shape that part of our future





46

### reMarkable 2

The perfect detox companion?

### Insight

An exclusive look into the future of BOULT audio

60



14

### Sk[AI]net

A whole new section dedicated to the latest news from the world of AI

### LEARN

#### 70 | Tips and Tricks

We bring you a selection of tips and tricks for jazzing up your phone!

### PLAY

#### 74 | Toys

We take a look at the EPOS Adapt Vision 1 camera and the Noise Buds Xero TWS earbuds

### SKOAR!

#### 79 | What's New

No need to scroll through Reddit threads to know what's new!

#### 82 | Kuvah

A look into the first ever CS2 Major held in Copenhagen

#### 92 | Reevu

SKOAR! Council shares their opinions on Rise of the Ronin

...and more



### ON THE eDVD

#### ESSENTIALS

- Adobe Acrobat Reader
- Avidemux
- Calibre
- Chrome
- CPU-Z
- Deluge
- Discord
- EasyBCD
- FFmpeg
- File Splitter and Joiner
- Firefox
- Foxit Reader
- Free Download Manager
- Free OCR
- Handbrake
- HDD Low Level Format Tool
- ...and more

#### Development Tools

A selection of open-source AI Development tools for you to explore

#### LECTURES

Some interesting lectures and informative videos by some of the best researchers

#### LEARN

Watch and learn... It's that simple. Added entertainment? Well, we've got you covered!

#### PLAY

Bored of your recxsting geeky content to keep you engaged through the day

#### TESTED

Featured Distros  
Some of the latest Distros for you to try  
Open-Source AI



# Digit Fast track

Vol. 19 No.05

## Table of Contents

# CHAPTERS

## DIGITAL DETOX

MAY 2024

- |   |  |
|---|--|
| <p>05 <b>Unpacking your digital footprint</b><br/>Understand and reshape your digital habits, paving the way for a healthier, more mindful engagement with technology</p> | <p>16 <b>Managing Time and Distractions</b><br/>Master your digital efficiency with tools to minimise distractions and optimise time</p> |
| <p>08 <b>The tech of Mindfulness</b><br/>Reclaim focus in the digital age with mindfulness and meditation apps</p>  | <p>20 <b>Improving Sleep and Personal Well-being</b><br/>Enhance your sleep quality with targeted apps and proven practices</p>          |
| <p>12 <b>Tech to enhance focus</b><br/>Empower your digital discipline and reclaim your focus with advanced tools</p>   | <p>25 <b>Time to get physical</b><br/>Explore and connect to enhance life through community and shared interests</p>                     |

### CREDITS

The people behind this book

#### EDITORIAL

Editor-in-Chief  
**Soham Raninga**

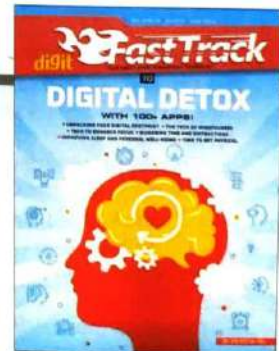
Executive Editor  
**Jayesh Shinde**

Managing Editor  
**Mithun Mohandas**

Deputy Features Editor  
and Copy Editor  
**Satvik Pandey**

#### DESIGN

Associate Art Director  
**Baiju NV**



#### © 9.9 Group Pvt. Ltd.

Published and printed by Vikas Gupta for and on behalf of the owners, 9.9 Group Private Limited (Formerly known as Nine Dot Nine Mediaworx Private Limited) and printed by him at International Print-o-Pac.

No part of this book may be reproduced, stored, or transmitted in any form or by any means without the prior written permission of the publisher.

#### May 2024

Free with Digit. If you have paid to buy this Fast Track from any source other than 9.9 Group Pvt. Ltd., please write to editor@digit.in with details

#### Custom publishing

If you want us to create a customised Fast Track for you in order to demystify technology for your community, employees or students contact editor@digit.in

[www.digit.in](http://www.digit.in) | May 2024 | FastTrack

# Frontline

Vol. 41 No.10

## Table of Contents

# FRONTLINE

Volume 41 – Number 10 – May 18–31, 2024 – ISSN 0970-1710 – [www.frontline.thehindu.com](http://www.frontline.thehindu.com) – 116 pages



### COVER STORY

## Rise of the autocrats

10/ The BJP's subversion of the electoral process and Prime Minister Modi's brazenly communal rhetoric have undermined the credentials of electoral democracy in India.

### RELATED STORIES

- 17/ ECI ushers India to its electoral nadir
- 27/ Machine's whim versus people's will

### ELECTION 2024

- 34/ BJP failing the OBC test
- 38/ **Maharashtra:** The silent majority of Baramati
- 42/ Interview with Sharad Pawar
- 44/ **West Bengal:** An undercurrent against Trinamool?
- 49/ **Madhya Pradesh:** Missed opportunity for the Congress
- 51/ Interview with Digvijaya Singh
- 53/ Interview with Shivraj Singh Chouhan
- 55/ **Bihar:** Mithila divided
- 56/ Makhana farmers in distress
- 58/ **Delhi:** Tough fight
- 61/ **Assam:** New borders bring new uncertainties

### 64/ Jammu and Kashmir: Article 370 the decider

66/ Interview with PDP leader Waheed-ur-Rehman Parra

### WORLD AFFAIRS

68/ Down and out in the UK

### ENVIRONMENT

76/ Interview with the writer Arati Kumar-Rao

### CINEMA

81/ Interview with Manoj Bajpayee

### SPOTLIGHT

85/ Remembering Abu Abraham

### ART

90/ Celebrating K.G. Subramanyan

### BOOKS

98/ In review



08/ The Fortnight

74/ Science Notebook

### WHITE SPACE

110/ A roof of one's own

### COLUMN

32/ Saba Naqvi

96/ Prathyush Parasuraman

06/ Letters

109/ On our bookshelf

112/ Staying in

113/ Stepping out

114/ Back Page

Cover image: A voter in Bardhaman in the third phase of the Lok Sabha election. SWAPAN MAHAPATRA/PTI

Caricatures: Satish Acharya



# Electronics For You

Vol. 56 No.05

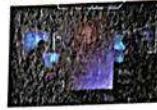
## Table of Contents

MAY 2024 | VOL. 56 NO. 5 | ISSN-0013-516X

# CONTENTS

### TECHNOLOGY

- 19 FUTURE: Energy Storage Solution Enters Iron Age (Part 1)
- 30 TRENDS: Digital Arms Race: The Code And Consequences Of State-Sponsored Malware



### MOVES

- 41 TECHNOLOGY: Designing Safer And Better Electric Car Batteries
- 45 BUSINESS: India's World Automotive Leadership Relies On Semiconductor



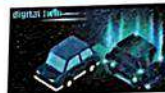
### STRATEGY

- 58 GROWTH: Automotive Electronics Industry Growth Prospects And Strategies
- 66 POLICY: How East-West Power Corridor Can Extend Time For Solar-PV And Wind Power Generation
- 71 INTERVIEW: "AIC-T-Hub Aims To Grow Startups So More Indian Unicorns Can Contribute To The GDP" — Rajesh Adla, CEO, AIC-T-Hub
- 76 INTERVIEW: Pros And Cons: Boul't's Varun Gupta On Contract Electronics Manufacturing



### DESIGN

- 80 CIRCUIT: Interesting Reference Designs Of Fans
- 82 BASICS: The Evolution And Importance Of Intermediate Frequency
- 94 AUTOMOTIVE: New Smarter And Faster Ways Of Car Manufacturing



### DO-IT-YOURSELF

- 97 CIRCUIT IDEA: Digital Thermometer
- 99 PROJECT: Batteryless E-paper Display
- 104 PROJECT: ChatGPT Terminal That Talks Using Google TTS
- 108 CIRCUIT IDEA: Light Cum Room Freshener Module With Two Options
- 110 PROJECT: Smart Timer For Liquid Mosquito Repellents



### REGULARS

- 8 Research & Innovation Updates
- 12 Truly Innovative Electronics
- 15 New Products
- 40 Electroons 2.0
- 48 Dashboard: Key Industry Trends That Can Shape The Future Of Your Business
- 50 Startups & Innovators
- 54 Industry News: Industry Updates

56<sup>TH</sup> YEAR OF PUBLICATION

**electronics**  
FOR YOU  
SINCE JANUARY 1969

**EDITOR** : Rahul Chopra  
**EDITORIAL CORRESPONDENCE** : Phone: +91-9811553335  
E-mail: editop@efy.in  
**SUBSCRIPTIONS & MISSING ISSUES** : Phone: +91-9811553335  
E-mail: support@efy.in  
**BACK ISSUES, BOOKS, KITS, COMPONENTS, etc** : Phone: +91-9811553335  
E-mail: support@efy.in  
**NEWSSTAND DISTRIBUTION** : Phone: +91-9811553335  
E-mail: efycirc@efy.in  
**ADVERTISEMENTS NEW DELHI (HEAD OFFICE)** : Phone: +91-9811553335  
E-mail: efenq@efy.in  
**MUMBAI** : E-mail: rmwest@efy.in  
**BENGALURU** : E-mail: rmosouth@efy.in

**CHINA** : Worldwide Focus Media  
E-mail: china@efy.in  
**GERMANY** : PMS Platenberg Media Service GmbH  
E-mail: germany@efy.in  
**JAPAN** : Tandem Inc.  
E-mail: japan@efy.in  
**TAIWAN** : J.K. Media  
E-mail: taiwan@efy.in  
**UNITED KINGDOM** : ASA Media  
E-mail: uk@efy.in  
**UNITED STATES** : E & Tech Media  
E-mail: usa@efy.in

Printed, published and owned by Ramesh Chopra. Printed at M.P. Printers, B-220, Phase-2, NOIDA-201305, Uttar Pradesh, on the first day of each month and published from D-87/1, Okhla Industrial Area, Phase-1, New Delhi 110020. Copyright 2023. All rights reserved throughout the world. Reproduction of any material from this magazine in any manner without the written permission of the publisher is prohibited. Although every effort is made to ensure accuracy, no responsibility whatsoever is taken for any loss due to publishing errors. EFY will not be responsible for any wrong claims made by an advertiser. Disputes, if any, will be settled in a New Delhi court only.

### SUBSCRIPTION RATES

EFY = Electronics For You

PRINT MAGAZINE	1 YEAR (12 copies each)	3 YEARS (36 copies each)	5 YEARS (60 copies each)
WITHIN INDIA (IN RUPEES)			
EFY (Rs 100/copy)	840	2150	3000
SAARC COUNTRIES (IN US\$ BY AIR)			
EFY	50	135	NA
OTHER COUNTRIES (IN US\$ BY AIR)			
EFY	100	270	NA

Courier delivery within India @ Rs 50 per copy  
e-magazine subscriptions within India are available at half the rates mentioned here.

Overseas rates for each e-magazine in US\$:

1 year: \$12; 3 years: \$33; 5 years: \$50 only

Please send payments only in favour of EFY Enterprises Pvt Ltd through demand draft/cheque/money order to D-87/1, Okhla Industrial Area, Phase 1, New Delhi 110020, or online at: <http://subscribe.efyindia.com> or scan the QR code.



# Electronics For You

Vol. 56 No.06

## Table of Contents

JUNE 2024 | VOL. 56 NO. 6 | ISSN-0013-516X

# CONTENTS

56<sup>TH</sup> YEAR OF PUBLICATION  
**electronics**  
FOR YOU  
SINCE JANUARY 1969


### TECHNOLOGY

- 25 INTERVIEW: "Detecting Defects Through Our In-Circuit Test Significantly Reduces The Cost Of Product Testing" — Jun Balangue, Business Development and Product Manager, Keysight Technologies
- 31 TRENDS: RISC-V Market Trends And Predictions Till 2030
- 36 FUTURE: Energy Storage Solution Enters Iron Age (Part 2)
- 48 INTERVIEW: "We Aim To Boost Skills, Spark Innovation, And Fuel The Growth Of India's Electronics Manufacturing Sector" — Prof. Nilesh Badwe, IIT Kanpur

### MOVES

- 51 INTERVIEW: "In Vehicle Finance, Understanding The Details Of The Vehicle And Battery's Condition And Usage Is Key To Accurately Assessing Risk" — Dev Arora, Co-founder and CEO, ALT Mobility
- 54 INTERVIEW: "Our Focus Is Primarily On Bharat Rather Than India" — Chakravarthi C, MD, Quantum Energy
- 56 TECHNOLOGY: Thermal Cameras: Game-Changers In Making Roads Safer
- 62 INTERVIEW: "We At Delta Focus On Chargers With Multiple Dispensing Guns" — Manjula Girish, Senior Director, Delta Electronics India



### STRATEGY

- 78  MY STORY: Breathing Through "First-Time Silicon Success" — Chitra Hariharan, Renesas India
- 86 INVENTORY: Deadstock Or Forgotten Treasure? 

### DESIGN

- 92 CIRCUIT: Interesting Reference Designs Of Audio Amplifiers
- 94 SEMICON: AI And IoT: Redefining Semiconductor Development

### DO-IT-YOURSELF

- 99 PROJECT: Voice-Controlled Obstacle-Avoiding Robot Using Bluetooth And Arduino Uno 
- 102 CIRCUIT IDEA: Multi Switch Control Buzzer/Appliance
- 106 CIRCUIT IDEA: Sawtooth Wave Generator
- 107 PROJECT: The Smallest GPS Tracker Ever
- 111 PROJECT: Smart Switch For Agriculture Irrigation
- 113 PROJECT: GPS Tracker With Arduino 

### REGULARS

- 8 Research & Innovation Updates
- 16 Truly Innovative Electronics
- 19 New Products
- 46 Electronics 2.0
- 64 Dashboard: Key Industry Trends That Can Shape The Future Of Your Business
- 66 Startups & Innovators
- 74 Industry News: Industry Updates

**EDITOR** : Rahul Chopra  
**EDITORIAL CORRESPONDENCE** : Phone: +91-981155335  
E-mail: edit@efy.in  
**SUBSCRIPTIONS & MISSING ISSUES** : Phone: +91-981155335  
E-mail: support@efy.in  
**BACK ISSUES, BOOKS, KITS, COMPONENTS, etc** : Phone: +91-981155335  
E-mail: support@efy.in

**NEWSSTAND DISTRIBUTION** : Phone: +91-981155335  
E-mail: efydc@efy.in

**ADVERTISEMENTS NEW DELHI (HEAD OFFICE)** : Phone: +91-981155335  
E-mail: efyens@efy.in

**MUMBAI** : E-mail: rmowest@efy.in

**BENGALURU** : E-mail: rmosouth@efy.in

**CHINA** : Worldwide Focus Media  
E-mail: china@efy.in

**GERMANY** : PMS Plantenberg Media Service GmbH  
E-mail: germany@efy.in

**JAPAN** : Tandem Inc.  
E-mail: japan@efy.in

**TAIWAN** : J.K. Media  
E-mail: taiwan@efy.in

**UNITED KINGDOM** : ASA Media  
E-mail: uk@efy.in

**UNITED STATES** : E & Tech Media  
E-mail: usa@efy.in

Printed, published and owned by Ramesh Chopra. Printed at M.P. Printers, B-220, Phase-2, NOIDA-201305, Uttar Pradesh, on the first day of each month and published from D-87/1, Okhla Industrial Area, Phase-1, New Delhi 110020. Copyright 2023. All rights reserved throughout the world. Reproduction of any material from this magazine in any manner without the written permission of the publisher is prohibited. Although every effort is made to ensure accuracy, no responsibility whatsoever is taken for any loss due to publishing errors. EFY will not be responsible for any wrong claims made by an advertiser. Disputes, if any, will be settled in a New Delhi court only.

### SUBSCRIPTION RATES

EFY = Electronics For You

PRINT MAGAZINE	1 YEAR (12 copies each)	3 YEARS (36 copies each)	5 YEARS (60 copies each)
WITHIN INDIA (IN RUPEES)			
EFY (Rs 100/copy)	840	2150	3000
SAARC COUNTRIES (IN US\$ BY AIR)			
EFY	50	135	NA
OTHER COUNTRIES (IN US\$ BY AIR)			
EFY	100	270	NA

Courier delivery within India @ Rs 50 per copy  
e-magazine subscriptions within India are available at half the rates mentioned here.

Overseas rates for each e-magazine in US\$:

1 year: \$12; 3 years: \$33; 5 years: \$50 only

Please send payments only in favour of EFY Enterprises Pvt. Ltd. through demand draft/cheque/money order to D-87/1, Okhla Industrial Area, Phase-1, New Delhi 110020, or online at: <http://subscribe.efyindia.com> or scan the QR code.



WWW.EFYMAG.COM



# Science Reporter

Vol. 61 No.05

## Table of Contents

# Science Reporter

Vol. 61, No. 5, May 2024

ISSN: 2582-6492 (Online) ISSN 0036-8512 (Print)

National Institute of Science Communication and Policy Research (NIScPR)  
Council of Scientific & Industrial Research (CSIR), New Delhi

# CONTENTS

## COVER STORY

### **How Artificial Intelligence is Transforming Education**

AK Bakhshi and Vinita Kapoor

**14**



### **AI on your device Why 2024 will be a watershed year for PCs and smartphones**

Anand Parthasarathy

**21**

### **Artificial Womb A revolutionary reproductive technology for next-gen humans**

Biju Dharmapalan

**24**







**EDITORIAL**

**Technologies Transforming the Life!**  
Sonali Nagar

9

**FEATURES**

**The Great North American Eclipse 2024**  
RC Kapoor

29



**From science to science communication**  
Chetna Krishna

38

**A Way to Heal**  
*Stem cells & regenerative medicine*  
Raktim Roy

40

**Symmetry**  
*An intricate concept*  
PK Mukherjee

42

**Unveiling the Future of AI: BINNs - Bio-Inspired Neural Networks**  
*Inspired Neural Networks*  
Monendra Grover and Jitendra Narayan

45

**OBITUARY**  
**The Nobel Prize Winning Physicist**  
*Prof. Peter Higgs Passes Away*  
Dr PK Mukherjee

36

**BOOK REVIEW**  
**All You Want To Know About The Moon**  
Rohit Kataria

50

**SCIENCE FICTION**  
**Cosmic Convergence: The Tale of Dr Carter and Dr Reed**  
Akanksha Upadhyay

52

---

Spectrum 10  
Indian S&T Breakthroughs 34  
Nature's Marvels 54  
What's New 56  
Test Your Knowledge 58  
Puzzle Corner 60  
Science Cartoons 62

b)

**Data Quest**

**Vol. XL No.05**

**Table of Contents**

MAY, 2024  
**CONTENTS**

**COVER STORY**

**16** The Rise of Generative AI in India



**CASE STUDY**

**28** Grievance Resolve(d). Adding the 'd' with Gen AI

**30** Beyond the Crystal Ball: Flipkart's AI Predicts What's Next

**LEARNING REIMAGINED**

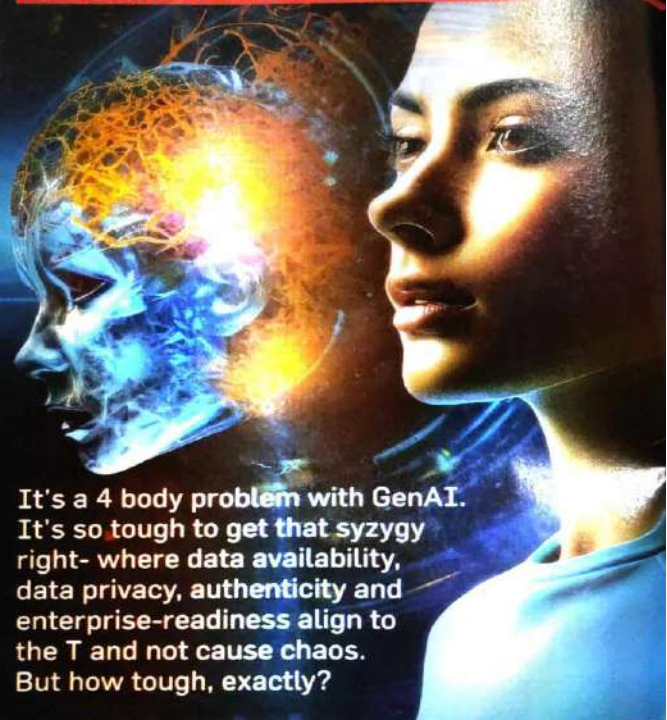
**34** NIIT, a leading provider of learning and development solutions, is at the forefront of innovation by integrating Generative AI into its curriculum and student engagement strategies



**RAJENDRA PAWAR**  
Executive Chairman, NIIT Limited

**08 | COVER STORY**

**GENAI:  
WALLFLOWERS  
ARE NOW  
WALL-FACERS**



It's a 4 body problem with GenAI. It's so tough to get that syzygy right- where data availability, data privacy, authenticity and enterprise-readiness align to the T and not cause chaos. But how tough, exactly?



## TALKING POINT

### 22 AI for All: A Future as Accessible as UPI in India

**JASPREET BINDRA**  
Managing Director & Founder,  
Tech Whisperer Limited, UK



**DR. SHALINI LAL**  
Founder, Unqbe



### 40 Leveling the Playing Field: How Generative AI is Revolutionizing SMEs and MMEs in India

**-SRIKANTH SRINIVASAN**  
Vice President & Head – Membership  
& Outreach, NASSCOM



### 44 Your dog cannot eat THIS homework.

**- DINESH KUMAR POOBALAN**  
CEO & CTO,  
Greatify



### 48 Architecting the Next Horizon: ITC's Digital Blueprint for Future Competitiveness and Growth.

**- GAURAV KATARIA**  
VP Digital (Manufacturing) & CDIO PSPD, ITC Limited



### 55 The GOOCI problem. Can technology give a Blue Tick here?

**- PADMAKUMAR NAIR**  
CEO and Co-Founder,  
Ennventure, Inc



### 58 Threading The Needle - Technology and Home Appliances

**- RAKESH KHANNA**  
Vice Chairman and MD,  
Singer India



### 60 Beyond the Pike Place: Percolating Customer Connections with Starbucks' Tech Brew

**- VIPIN GUPTA**  
CTO, TATA Starbucks



### 66 AI & the Art of CX: Teleperformance's Guide to Winning in India

**- VISPI PALSETIA**  
CIO,  
Teleperformance India



## OPINION

### 52 GenAI: Powering Enterprise Transformation through Trust

### 69 How Secure Are You?



## INDUSTRY EVENT REPORT

### 72 SAP NOW India 2024: Accelerating Growth with Innovation and Sustainability

## REGULARS

06 DQ Team

07 Edit

BENQ ideaCam S1 Pro

p76

# EXPLORE

COVER STORY  
GREEN TECH

**p14**

Empowering rural bioenergy

**p16**

Innovations in electric mobility

**p19**

Innovations driving sustainable technology

**p21**

Revolutionary technologies for environmental resilience



**p23**

Exploring green technology's environmental impact

**p25**

Transforming e-waste into a resource

**p27**

Unlocking opportunities in e-waste

**p29**

The green revolution in technology industries

**p32**

Tackling the global e-waste problem

**p34**

Exploring eco-friendly materials in electronics

**p38**

The future of sustainable technology

AI CHIPS

**p42**

AI hardware innovations reshaping industries

GAMING

**p46**

Cloud gaming unlocked: Exploring the top services

HEALTHTECH

**p50**

How AI is revolutionizing Assistive Technology

RETAILTECH

**p54**

Transforming retail through technology

ASSISTIVE TECHNOLOGY

**p58**

Navigating digital accessibility

ELECTRIC VEHICLE

**p60**

Enhancing EV reliability: Innovations in liquid cooling

TECH & TREND

**p66**

The future of wireless charging with NFC tech in Android 15

CYBERSECURITY

**p68**

Revolutionizing banking security

REVIEW

**p73**

Primebook Wi-Fi

REVIEW

**p75**

Safe Cams R2 with GPS

\*\*\*\*\*