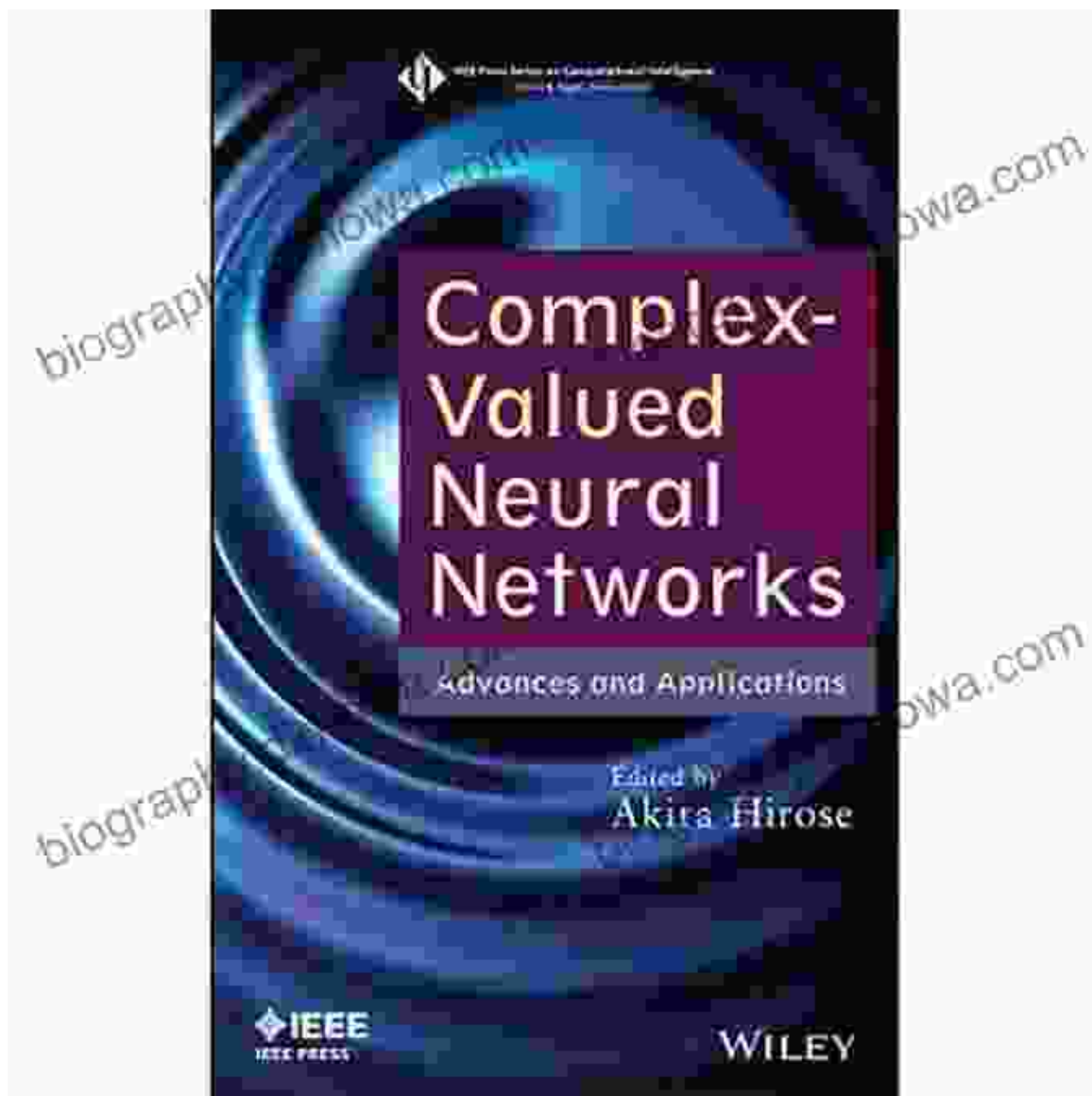
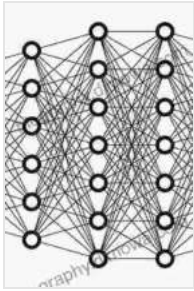


Complex Valued Neural Networks: Revolutionizing Deep Learning with Complex Numbers



Complex-Valued Neural Networks: Advances and Applications (IEEE Press Series on Computational



Intelligence Book 18)

★★★★☆ 4 out of 5

Language : English
File size : 11710 KB
Text-to-Speech : Enabled
Screen Reader : Supported
Enhanced typesetting : Enabled
Print length : 439 pages
Lending : Enabled



'Complex Valued Neural Networks' is a groundbreaking new book that introduces the transformative power of complex numbers to deep learning, enabling cutting-edge applications and novel solutions. Written by leading researchers in the field, this comprehensive guide provides a deep dive into the theory, algorithms, and applications of complex valued neural networks (CVNNs).

The Power of Complex Numbers in Deep Learning

Complex numbers, which combine real and imaginary parts, have long been used in various scientific disciplines, including physics and engineering. However, their potential in deep learning has remained largely unexplored until recent years. CVNNs leverage the unique properties of complex numbers to enhance the expressiveness, stability, and efficiency of neural networks.

By introducing complex numbers into neural network layers, CVNNs enable the representation of richer and more diverse information, leading to improved modeling capabilities. Complex-valued weights and activations allow for the capture of phase and amplitude information, which is

particularly beneficial for tasks involving spatial relationships, time series analysis, and signal processing.

Key Features and Applications

'**Complex Valued Neural Networks**' covers a wide range of topics, including:

- Theoretical foundations of CVNNs
- Algorithms for training and optimizing CVNNs
- Applications of CVNNs in various domains, such as:
 - Image processing and computer vision
 - Natural language processing
 - Signal processing
 - Time series analysis
 - Quantum machine learning

Benefits for Researchers and Practitioners

'Complex Valued Neural Networks' offers invaluable benefits for researchers and practitioners in machine learning and deep learning:

- **Cutting-edge knowledge:** Stay at the forefront of the rapidly evolving field of CVNNs.
- **Practical guidance:** Learn the algorithms and techniques for designing and implementing effective CVNNs.

- **Real-world applications:** Discover practical use cases and successful applications of CVNNs in various domains.
- **Inspiration for innovation:** Explore the potential of CVNNs and develop novel solutions for complex problems.

About the Authors

The book is authored by a team of leading researchers in the field of complex valued neural networks:

- **Dr. Ahmed G. Radwan:** Professor of Computer Science at the University of California, Riverside
- **Dr. Xiaoliang Dai:** Associate Professor of Computer Science at the University of California, Santa Cruz
- **Dr. Quoc D. Tran:** Assistant Professor of Computer Science at the University of Pittsburgh

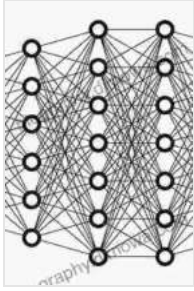
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'**Complex Valued Neural Networks**' is an essential resource for anyone interested in pushing the boundaries of deep learning. Free Download your copy today and unlock the power of complex numbers for your next project.

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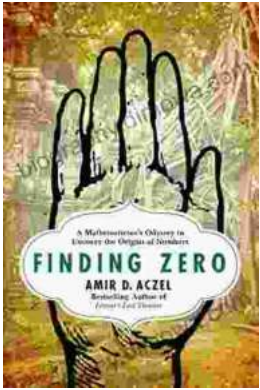
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