UNIVERSITI TEKNOLOGI MARA

POWER SYSTEM SECURITY

APPRECIATING THE PRESENCE OF ARTIFICIAL INTELLIGENCE

Ismail Musirin

UiTM Professorial Lecture

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PREFACE

In an era marked by technological advancements and increasing dependence on electricity, ensuring the security of power systems has never been more critical. This book explores the profound impact of artificial intelligence (AI) on maintaining and enhancing the security of power systems. It is designed to provide readers with a thorough understanding of how AI can be harnessed to address the multifaceted challenges of modern power grids. Power System and Understanding the Artificial Intelligence serves as the cornerstone of this book. It introduces readers to the fundamental concepts of power systems and the pivotal role AI plays in their operation. The chapter also examines real-world blackout events in Malaysia, providing a contextual backdrop that underscores the importance of robust power system security. By discussing the experiences of electric utilities in Malaysia, readers gain insights into the practical challenges and opportunities associated with integrating AI into power systems. Subsequent discussion on Intelligent Distributed Generation Installation in Voltage Security Improvement delves into the critical issue of voltage security. Power system compensation and distributed generation (DG) describe various methodologies for assessing and enhancing voltage security, illustrating how AI can significantly improve these processes. Examples of results from practical applications demonstrate the effectiveness of AI-driven techniques in maintaining voltage security.

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