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EDUCATION:

• 2021-Present: PhD, Electrical and Electronics Engineering

Dicle University, Diyarbakir, Turkey

Thesis: "Fault-Tolerant Control in Distributed DC Microgrids"

• 2016-2019: MSc, Energy Systems Engineering

Firat University, Elazig, Turkey

Thesis: "Estimation of Voltage Stability Indices in Power Systems using Extreme Learning Algorithm"

• 2004-2008: BSc, Electrical and Electronics Engineering

Dicle University, Diyarbakir, Turkey

RESEARCH INTERESTS:

• DC Microgrid Control and Protection

• Fault-Tolerant Power Electronic Systems

• AI-Based Power System Stability Analysis

• Renewable Energy Integration Technologies

Paper ID-Title : 93-Adaptive Event-Driven Distributed Control for Efficient Power Management in DC Microgrids

Abstract:

Networked control of multi-agent systems under limited communication resources is a critical challenge in DC microgrids. In this work, we propose an adaptive, event-driven, distributed control strategy that triggers information exchange among distributed generation units (DGUs) only when the deviation between the actual subsystem state and its local prediction exceeds a prescribed threshold. By dynamically adjusting the triggering thresholds based on network conditions, our approach reduces communication overhead by approximately 44% compared to a 1kHz periodic scheme, while preserving voltage regulation within pm 0.13 of the 380V nominal value. Controller gains are designed via the Algebraic Riccati Equation (ARE), providing closed-loop stability. We characterize the trade-off between communication rate and control performance. Simulation results on a benchmark three-DGU DC microgrid demonstrate these improvements. These findings suggest that adaptive event-driven control with Riccati-based gain design can enable scalable, reliable power management in future DC microgrids.