Capacitor sorting and transportation

Can a modified capacitor voltage balancing sorting algorithm reduce time complexity?
To address the problem,a modified capacitor voltage balancing sorting algorithm is proposed in this paper. The proposed algorithm could avoid sorting all the module capacitor voltages by selecting only a certain number of the largest or smallest module capacitor voltages,and thus reduces time complexity greatlywithout losing control precision.

How can we avoid sorting capacitor voltages within the inserted group?
In this way, we avoid sorting capacitor voltages within the inserted group and the bypassed group. As a result, unnecessary computational cost can be avoided by reducing extra comparisons. Finding out an order statistic can be implemented by modified quicksort method [17], which takes the idea of divide and conquer.

What is a capacitor voltage balancing sorting algorithm?
Capacitor voltage balancing sorting algorithm makes use of the effect of arm current on capacitor voltages to keep capacitor voltages balanced. That is,when arm current is positive (i.e. arm current will charge the inserted capacitor),insert SMs with relative low capacitor voltages.

Can a stratified voltage balancing control method improve the sorting process?
[...] To improve the sorting process and reduce the switch frequency of sub-modules in the capacitor voltage balancing control of modular multilevel converter (MMC), a stratified voltage balancing control method of sub-module capacitor voltage for high voltage level MMC system is proposed.

Does a capacitor voltage balancing strategy reduce computational efforts?
Comparison of the proposed capacitor voltage-balancing strategy with the conventional strategy indicates that the required computational efforts are noticeably reducedsince it do not need to sort all capacitor voltages within each control cycle.

Which balancing algorithm is used for SM capacitor voltages?
Among various existing capacitor voltage balancing control strategies,sorting algorithm is the most popular and widely used [8 - 10]. Conventional balancing sorting algorithm proposed in [11]measured and sorted SM capacitor voltages within each control period using bubble sorting algorithm.

This paper presents a new voltage sorting algorithm for suppressing submodule"s (SM) capacitor voltage fluctuations and minimizing voltage difference in Modular Multilevel Converters (MMC)...

The process of conventional capacitor voltage balancing sorting algorithm is as follows [7, 16]: (i) measure capacitor voltages of each SM in a bridge arm and sort the voltages in ascending or descending order, (ii) Monitor the direction of the arm current, acquire the number of SMs that should be inserted in current sampling time (i.e. n on), and (iii) select n on SMs ...

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This paper investigates the variation in sorting complexity at steady state and transient conditions for a brute-force and past-position methodology based on the bubble sort algorithm. A focus is ...

This paper investigates the variation in sorting complexity at steady state and transient conditions for a brute-force and past-position methodology based on the bubble sort algorithm. A focus is placed on the potential for "worst-case" sorting, requiring increased computational effort.

Capacity Planning in Consolidation-based Transportation and Logistics Planification de la capacité en logistique et transport avec consolidation Teodor Gabriel Crainic TeodorGabriel.Crainic@CIRRELT LAMIH, U. Polytechnique Hauts-de-France, le 28 novembre 2023

Abstract: Thisarticle presents an efficient analogue sorting algorithm for balancing the submodule (SM) capacitor voltages of modular multilevel converter (MMC). The proposed analogue sorting algorithm offers the advantage of fast convergence rate without any need of recursive loops for the implementation on embedded devices. It can be easily ...

A modified capacitor voltage balancing sorting algorithm is proposed that is able to balance the module voltage with lower computation and reduce the switching frequency of power devices significantly, without noticeably increasing the capacitor voltage ripples. The modular multilevel converter (MMC) with large-scale sub-modules has the advantage of ...

Abstract: A fundamental frequency-sorting algorithm with staircase modulation is proposed to balance the floating capacitors for modular multilevel converters. The driving pulses are assigned to the submodules at every fundamental period according to their charging capabilities for the capacitors.

This paper presents the details of an innovative submodule selection method for the submodule capacitor"s voltage balancing within one arm of an MMC. "The Tortoise and the Hare" sorting method...

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Capacitors are available in a wide range of capacitance values, from just a few picofarads to well in excess of a farad, a range of over 10(^{12}). Unlike resistors, whose physical size relates to their power rating and not their ...

The capacitor voltage sorting algorithm is the key to affecting the simulation efficiency of the electromagnetic transient model of hybrid MMC in the unlocking mode. This article studies the basic principle of heap sorting and derives its time complexity. Based on this, a capacitor voltage sorting algorithm of hybrid MMC based on heap sorting ...

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Waste collection and transportation systems can be optimized by incorporating geographic information system (GIS) ... Sorting waste in households enhances the efficacy of waste segregation at MRFs because it takes less time and less energy to separate presorted waste (Kochar, 2021). Adoption of sustainable waste management practices involving effective ...

This paper proposes a new strategy to achieve balanced capacitor voltages in modular multilevel converters. Among the possible solutions, centralized arm control approaches are often adopted. These methods require a balancing technique based on a sorted list of the sub-modules according to their capacitor voltages. In order to ...

Le Wisconsin Card Sorting Test Cette épreuve permet une évaluation globale des fonctions exécutives, et plus particulièrement la capacité à passer d"une tâche mentale à une autre (switch). On présente au sujet 4 cartes qui diffèrent de par leur couleur, la forme des items présentés sur chaque carte (ronds, carrés, triangles, etc.) et de par le nombre de ces items. Le sujet ...

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