Ricardo Limongi

@limongi

Jack Wilkinson
@jd_wilko

‘Show me the data’. Useless.

‘Show me the study design’. Much better.

09:02 · 19/08/21 · Twitter for iPhone

NEWS | 12 December 2023

More than 10,000 research papers were retracted in 2023 — a new record

The number of articles being retracted rose sharply this year. Integrity experts say that this is only the tip of the iceberg.

ChatGPT "contamination": estimating the prevalence of LLMs in the scholarly literature

Andrew Gray

The use of ChatGPT and similar Large Language Model (LLM) tools in scholarly communication and academic publishing has been widely discussed since they b
This study uses keywords known to be disproportionately present in LLM-generated text to provide an overall estimate for the prevalence of LLM-assisted writ
it is found that several of those keywords show a distinctive and disproportionate increase in their prevalence, individually and in combination. It is estimated t
were LLM-assisted, though this number could be extended and refined by analysis of other characteristics of the papers or by identification of further indicativ

AI intensifies fight against 'paper mills' that churn out fake research

Text- and image-generating tools present a new hurdle for efforts to tackle the growing number of fake papers making their way into the academic literature.

SCIENCEINSIDER | PEOPLE & EVENTS

Embattled Harvard honesty professor accused of plagiarism

Academic chapter and two books authored by Francesca Gino appear to copy from sources including student theses, blogs, and news reports

9 APR 2024 · 4:50 PM ET · BY CATHLEEN O'GRADY

The New York Times

Stanford President Will Resign After Report Found Flaws in His Research

Marc Tessier-Lavigne was cleared of accusations of scientific fraud and misconduct. But the review said his work had "multiple problems" and "fell below customary standards of scientific rigor."

Contents lists available at ScienceDirect

Surfaces and Interfaces

journal homepage: www.sciencedirect.com/journal/surfaces-and-interfaces

The three-dimensional porous mesh structure of Cu-based metal-organic-framework - aramid cellulose separator enhances the electrochemical performance of lithium metal anode batteries

Manshu Zhang [a,1], Liming Wu [a,1], Tao Yang [b], Bing Zhu [a], Yangai Liu [a,*]

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ARTICLE INFO

Keywords:
Lithium metal battery
Lithium dendrites
CuMOF-ANFs separator

ABSTRACT

Lithium metal, due to its advantages of high theoretical capacity, low density and low electrochemical reaction potential, is used as a negative electrode material for batteries and brings great potential for the next generation of energy storage systems. However, the production of lithium metal dendrites makes the battery life low and poor safety, so lithium dendrites have been the biggest problem of lithium metal batteries. This study shows that the larger specific surface area and more pore structure of Cu-based metal-organic-framework - aramid cellulose (CuMOF-ANFs) composite separator can help to inhibit the formation of lithium dendrites. After 110 cycles at 1 mA/cm^2, the discharge capacity retention rate of the Li-Cu battery using the CuMOF-ANFs separator is about 96 %. Li-Li batteries can continue to maintain low hysteresis for 2000 h at the same current density. The results show that CuMOF-ANFs composite membrane can inhibit the generation of lithium dendrites and improve the cycle stability and cycle life of the battery. The three-dimensional (3D) porous mesh structure of CuMOF-ANFs separator provides a new perspective for the practical application of lithium metal battery.

1. Introduction

Certainly, here is a possible introduction for your topic:Lithium-metal batteries are promising candidates for high-energy-density rechargeable batteries due to their low electrode potentials and high theoretical capacities [1,2]. However, during the cycle, dendrites chemical stability of the separator is equally important as it ensures that the separator remains intact and does not react or degrade in the presence of the electrolyte or other battery components. A chemically stable separator helps to prevent the formation of reactive species that can further promote dendrite growth. Researchers are actively exploring different materials and designs for separators to enhance their me-

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RETRACTED

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Lithium metal, due to its advantages of high theoretical capacity, low density and low electrochemical reaction potential, is used as a negative electrode material for batteries and brings great potential for the next generation of energy storage systems. However, the production of lithium metal dendrites makes the battery life low and poor safety, so lithium dendrites have been the biggest problem of lithium metal batteries. This study shows that the larger specific surface area and more pore structure of Cu-based metal-organic-framework - aramid cellulose (CuMOF-ANFs) composite separator can help to inhibit the formation of lithium dendrites. After 110 cycles at 1 mA/cm^2, the discharge capacity retention rate of the Li-Cu battery using the CuMOF-ANFs separator is about 96 %. Li-Li batteries can continuously maintain low hysteresis for 2000 h at the same current density. The results show that CuMOF-ANFs composite membrane can inhibit the generation of lithium dendrites and improve the cycle stability and cycle life of the battery. The three-dimensional (3D) porous mesh structure of CuMOF-ANFs separator provides a new perspective for the practical application of lithium metal battery.

1. Introduction

Certainly, here is a possible introduction for your topic:Lithium-metal batteries are promising candidates for high-energy-density rechargeable batteries due to their low electrode potentials and high theoretical capacities [1,2]. However, during the cycle, dendrites forming on the lithium metal anode can cause short circuit, which can affect the safety and life of the battery [3–9]. Therefore, researchers are indeed focusing on various aspects such as negative electrode structure [10], electrolyte additives [11,12], SEI film construction [13,14], and collector modification [15] to inhibit the formation of lithium dendrites. However, using a separator with high mechanical strength and chemical stability is another promising approach to prevent dendrites from infiltrating the cathode. By incorporating a separator with high mechanical strength, it can act as a physical barrier to impede the growth of dendrites. This barrier can withstand the mechanical stress exerted by the dendrites during battery operation, preventing them from reaching the cathode and causing short circuits or other safety issues. Moreover, chemical stability of the separator is equally important as it ensures that the separator remains intact and does not react or degrade in the presence of the electrolyte or other battery components. A chemically stable separator helps to prevent the formation of reactive species that can further promote dendrite growth. Researchers are actively exploring different materials and designs for separators to enhance their mechanical strength and chemical stability. These efforts aim to create separators that can effectively block dendrite formation, thereby improving the safety and performance of lithium-ion batteries. While there are several research directions to address the issue of dendrite formation, using a separator with high mechanical strength and chemical stability is an important approach to prevent dendrites from infiltrating the cathode and ensure safe operation of lithium metal batteries.

Several types of separators currently used in research include nanoporous polymer separators [16], ceramic composite separators [17], nanofiber separators [18–20], and metal-organic skeleton (MOF) separators [21–24]. While these separators have shown some ability to inhibit the growth of lithium dendrites, they still have some drawbacks,

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Computer Science > Machine Learning

[Submitted on 3 Jun 2024]

Learning from Streaming Data when Users Choose

Jinyan Su, Sarah Dean

In digital markets comprised of many competing services, each user chooses between multiple service providers according to their preferences, and the chosen service makes use of the user data to incrementally improve its model. The service providers' models influence which service the user will choose at the next time step, and the user's choice, in return, influences the model update, leading to a feedback loop. In this paper, we formalize the above dynamics and develop a simple and efficient decentralized algorithm to locally minimize the overall user loss. Theoretically, we show that our algorithm asymptotically converges to stationary points of of the overall loss almost surely. We also experimentally demonstrate the utility of our algorithm with real world data.

Comments: Accepted by ICML24
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“Ciência aberta significa **transparência** e **compartilhamento** de conhecimento nos **processos de pesquisa** para tornar o conhecimento **acessível** por meio de grupos acadêmicos, setores e fronteiras nacionais”.

RCN, 2020

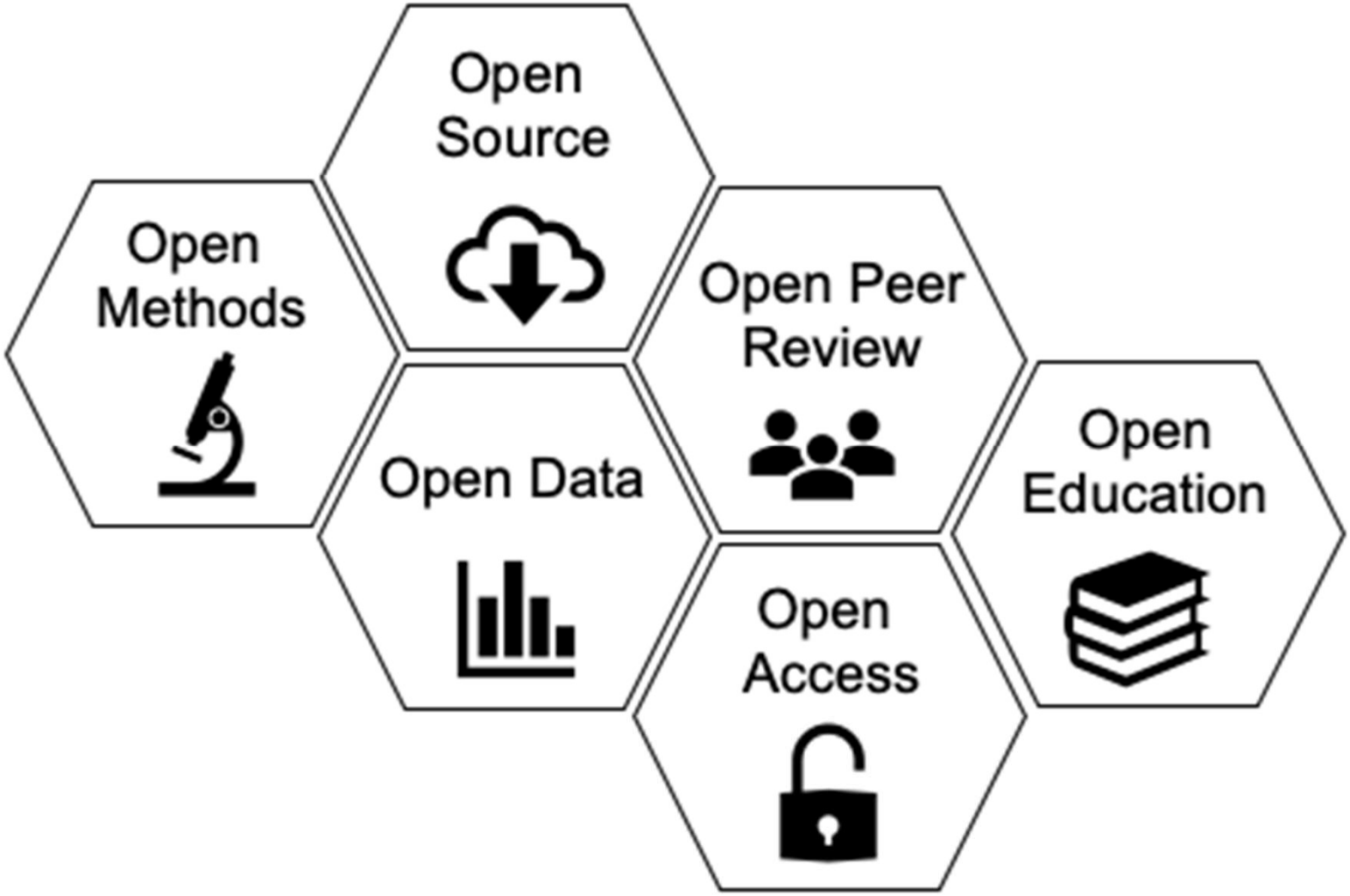
Transparência

Quando os pesquisadores empregam transparência em suas pesquisas, em outras palavras, quando **documentam e compartilham adequadamente** os dados e processos associados às suas análises, a comunidade de pesquisa mais ampla é capaz de economizar um **tempo valioso ao reproduzir ou construir** sobre os resultados publicados.

RCN, 2020

Reprodutibilidade e Replicabilidade

- Reprodutibilidade:
  - Os autores fornecem todos os dados necessários e os códigos computacionais para executar a análise novamente, recriando os resultados.
- Replicabilidade:
  - Estudo que chega às mesmas descobertas científicas de outro estudo, coletando novos dados (possivelmente com métodos diferentes) e concluindo novas análises.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