



A View on Cloud Computing from above the Clouds

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This installment of *Computer's* series highlighting the work published in IEEE Computer Society journals comes from *IEEE Transactions on Cloud Computing*.

Cloud computing is a rapidly evolving field with many exciting drivers for current and future innovations. The field itself involves a lot of interdisciplinary research and is a basis for other intensively discussed topics. But how will it evolve as an academic discipline? What are the current research trends?

A forthcoming article in *IEEE Transactions on Cloud Computing* called “A Scientometric Analysis of Cloud Computing Literature” by Stefan Voß and me is the first comprehensive and empirical study of cloud computing research from a metaperspective.

The scientometric analysis explores 15,379 peer-reviewed articles retrieved from Elsevier’s Scopus that are related to cloud computing and were published between 2008 and 2013. The analysis provides insights into publishing patterns (subject areas, contributing countries, publication outlets, coauthorship distribution) as well as rankings on research productivity and impact by analyzing

the number of publications and citations of publication outlets, affiliations, and individual authors.

Our results show that Rajkumar Buyya (University of Melbourne) is currently the most influential and productive scholar in the field. Further, we demonstrate the occurrence of the Matthew effect describing a phenomenon of accumulated advantage such as when other scientists repeatedly reward highly recognized publications.

To dive deeper into important topics and trends, we performed a keyword analysis on 32,620 unique terms scraped from the examined publications. The prevalence of frequent keywords and keyword clusters emphasizes the focus of research activities and demonstrates current trends, such as those related to big data and the Internet of Things as well as current implementation practices.

The keyword analysis demonstrates that current published research focuses on cloud technology itself rather than on related socioeconomic issues. However,

trends identified by analyzing keyword occurrences per year indicate a shift of research activities toward socioeconomic issues. Indeed, this trend is indispensable for solving understudied problems that might facilitate further adoption of cloud computing in different parts of society. Consequently, we elucidated some research gaps that can help set future research agendas.

By providing information on important publications, current topics, and trends; describing how knowledge is conveyed and shared within the community; and identifying key contributors and driving forces, the article gives a thorough overview of cloud computing research. Careful readers will benefit from our results because they can help steer individual projects, extend research collaborations, and select a proper publication outlet, just to name a few benefits. ■

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