Decision-Making and Computational Modeling of Big Data for Sustaining Influential Usage

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Big Data is data whose shape and volume are rising with the passage of time and innovations in technology. This increase will give birth to more uncertain and complex situations, which will then be difficult to properly analyze and manage. Various devices are interconnected with each other, which communicate different types of information. This information is used for different purposes. A huge volume of data is produced, and the storage becomes larger. Computational modeling is the tool that helps analyze, process, and manage the data to extract useful information. The modern industry’s challenge is to incorporate knowledge into Big Data applications to deal with distinguishing difficulties in computational models. The techniques and models are delivered with guides to help analysts quickly fit models to information insights. The decision support system is a strong system that plays a significant role in shaping Big Data for sustaining efficiency and performance. Decision-making through computational modeling is also a powerful mechanism for supporting efficient tools for managing Big Data for influential use. Keeping in view the issues of modern-day industry, the proposed study has been considered to present decision-making and computational modeling of Big Data for sustaining influential usage. The existing state-of-the-art literature is presented in an organized way to analyze the currently available research.

1. Introduction

Gigantic speculation and innovative advances in a variety of broad and longitudinal data on many platforms bring about a lot of large information. For example, these “large information” data sets can conceivably propel central nervous system (CNS) examination and medication improvement [1]. The idea of huge information in composite materials for configuration reason with center around practically evaluated “carbon nanotube” strengthened composites being tended to through lattice-free strategy and an improved neural organization (ONN) tactic. The thought about the exactness of the created ONN model comparative with network-free strategy is presented. An extensive parametric examination was likewise performed to explore the impact of mathematical measurements, CNT dissemination, and volume portion on vibrational recurrence of the nanocomposite [2]. The field of genomics is speedily creating toward single-cell examination, and significant advances in proteomics and metabolomics have been made lately. The advancements in wearables and electronic wellbeing records are ready to change clinical preliminary plans. This ascent of ‘large information’ holds the guarantee to change research progress yet, in addition, clinical dynamic towards exactness medication. Nephrology is seemingly lingering behind, and subsequently, these are energizing occasions to begin (or divert) an examination profession to use these improvements in nephrology [3].

In any case, the cutting-edge information pipeline designs do not offer implicit functionalities for guaranteeing information veracity, which incorporates information
exactness, reliability, and security. Besides, permitting the middle information to be handled, particularly in the serverless processing climate, is turning into a bulky undertaking. To fill this exploration hole, research work presented a productive and novel information pipeline engineering, namely Coherent Coordination of Data Migration and Computation (CCoDaMiC), bringing both the information relocation activity and its calculation together into one spot. The proposed structure is executed in its own Open Stack climate and Apache NiFi [4]. Research work presented a framework for multiclass dynamic OD demand estimation (MCDODE) in a network with a large scale to function for any vehicular data generally. The approach cast the standard OD estimation approach with the tensor representation of spatiotemporal flow into a computational graph and all the features of formulation of MCDODE. With the help of a forward-backward algorithm, the formulation of a computational graph for MCDODE is efficiently solved [5].

Smith and Powell [6] presented an approach in which the analysis of the chemical pant system was done. The method consists of a new cluster and detects an approach to fault detection using machine-learning clustering algorithms with the aim to enhance fault detection time identification. Complex variables of plant data were simulated, analysed through principal component analysis, and clustered into groups through a unique algorithm based on correlation. Results of the approach were accurate and showed the efficiency of the research. There have been numerous analyses with respect to how different developments can be applied with up-down the metropolitan energy framework. The analysis range from people’s energy utilization design portrayal by utilizing client conduct information in the keen home to the complex information-driven organizing of local-scale energy framework. An orderly survey on the status of metropolitan energy framework related advanced developments just as imminent attitude toward the future use of such computerized innovations. As investigated, the study planned to distinguish a few essential issues where digitization should be organized in metropolitan energy framework, depiction to guide towards future advanced innovation empowered keen metropolitan energy framework. Finally, the study brings up the exploration gaps that should be satisfied [7].

The proposed study contribution is to highlight the recent advances in the field and to analyze the decision-making and computational modeling of Big Data for sustaining influential usage. Literature was searched for finding the associated materials to the proposed study. Various popular libraries were searched for identifying the relevant materials for the proposed study. The results of the search process were categorized for showing the advancement in the field.

The organization of the paper is as follows. Section 2 shows the detail of the computational modeling and Big Data with the literature. Details of Big Data technologies and their management are given in Section 3. Section 4 describes artificial intelligence and Big Data. The analysis of the existing literature for decision-making and computational modeling of Big Data is briefly discussed in Section 5. The paper concludes in Section 6.

2. Computational Modeling and Big Data

Various applications of Big Data exist. These applications range from simple to more complex [8–10]. It includes Big Data, its features, healthcare facilitation, Big Data management, applications of artificial intelligence in healthcare, and many others. Upgrading emotional prosperity is appropriate for all associations for the maintainable advancement of an economy. While the medical issue was recently considered, the most dependable indicator, the accessibility of information on individuals’ very own ways of life currently offers another dimension into prosperity for associations [11]. The study was presented with the purpose to propose a novel technique for sentence likeness calculation to remove the syntactic and semantic data of the semiorganized and shapeless sentences. The study focus was to essentially think about the “subjects”, “predicates,” and “objects” of sentences and use Stanford Parser to order the reliance connection to compute the syntactic and semantic likeness among two sentences. At last, the presentation of the model with the “Microsoft Research Paraphrase Corpus (MRPC)” was demonstrated, which comprises 4076 sets of preparing sentences and 1725 sets of test sentences, and the greater part of the information came from the information on social information. Broad reproductions show that the technique shows good results with other cutting-edge strategies with respect to the relationship coefficient and the mean deviation [12]. The technique and models are delivered close by this article as an open-access library, with guides to help analysts quickly fit models to information. This shows that a versatile ABC conspire with an overall rundown, and distance metric is fit for performing model fitting for an assortment of epidemiological information. It additionally does not need a huge hypothetical foundation to utilize and can be made available to the assorted epidemiological examination network [13].

The study gives an administration point of view of authoritative components that adds to the decrease of food spending via the utilization of plan science standards to investigate causal connections between food conveyance (hierarchical) and utilization (cultural) factors. Subjective information was gathered with an authoritative viewpoint from business food shoppers alongside enormous scope food shippers, wholesalers, and retailers. Cause-effect models are made, and “what-if” simulations are accompanied over the development and application of a Fuzzy Cognitive Map approach ways to deal with and clarify active interrelationships [14]. Understanding the promises of multiomics information will require a mix of unique omics information, just as naturally significant, unthinking system or metabolic model on which to overlay this information. In addition, another worldview for metabolic model assessment is vital. The requirement for multiomics information coordination is just as the going with difficulties. Besides, the study proposed a structure for describing the biology of the gut microbiome dependent on metabolic organization displaying [15]. The study has considered an analytical model for steering the optimization of the end-to-end time-to-time solution to incorporate data analysis and computation. An
intelligent data broker was designed and developed to effectively interlink the analysis and computation stages for practically achieving the optimal time to solution. The experimental work was carried out on both real-world computational fluid dynamics and synthetic applications, and the results of the experiments show that the model reveals an average relative error of less than 10% while the performance can be enhanced to 131% for synthetic programs and 78% for the applications of real-world computational fluid dynamics [16]. Incompatibility of the difficulties, a bound together methodological system is planned with information organizing, information warehousing, and mining, representation, and translation of ancient rarities to help network and incorporation measure. Multidimensional ontologies, biological system conceptualization, and Big Data oddity are additional inspirations encouraging the connections between occasions of production network tasks. The model assumed for streamlining the assets is dissected as far as adequacy of the incorporated structure explanations in worldwide stockpile chains that obey the laws of geology. The coordinated verbalizations investigated with laws of topography can influence the operational costs, sure for better with diminished lead times and improved stock administration [17]. A structure for Big Data investigation in farming and present manners by which they can be applied to take care of issues in the present agrarian area is presented. The survey also presents to pick up knowledge into cutting-edge Big Data applications in farming and to utilize an underlying way to deal with distinguishing difficulties to be tended. This audit of Big Data applications in the agrarian area has likewise uncovered a few assortments and investigation instruments that may have suggestions for the force connections among ranchers and enormous companies [18].

Process monitoring for quality is a major information-driven quality way of thinking focused on deformity identification and observational information revelation. It was initially evolved to tackle a mind-boggling fabricating quality issue. It was established on big models, a prescient displaying worldview dependent on AI, measurements, and enhancement that incorporates a learning perspective that requires numerous models to be created to locate the last model. When managing enormous information, the information structure is not known ahead of time; in this manner, there is no earlier differentiation between learning calculations, and plenty of choices to look over. At long last, two deformity discovery contextual analyses are given profoundly lopsided information got from genuine assembling frameworks to approve the proposition [19]. Immense measures of information are created with the advancement of brilliant urban areas and metropolitan figuring innovations. The information is frequently caught from different sensors with heterogeneous structures and profoundly decentralized associations. Incorporated information representation and keen computational models are needed for more unpredictable errands in metropolitan registering. Contextual investigations using the semiholography computational model were demonstrated, as well as new concerns to address with regard to our model [20].

3. Big Data Technologies and Their Management

Automated maintenance is the important phase of deciding production procedures and is an important method to manage various challenging issues. The study has presented an approach of Big Data refining for cognitive modeling which demonstrates the decision-making and rightness of modeling. The method practices the request to Big Data for verification of cognitive modeling of the component. Intelligent agents were used for request creation and feedback from decision-makers. The results showed the success of the study [21]. A study was presented which described the five Vs of Big Data. These five Vs were reviewed along with the innovative technologies such as NoSQL databases for accommodating the requirements of Big Data enterprises. The starring role of Big Data conceptual modeling is examined and recommendations were made for an effort of efficient conceptual modeling with demand to Big Data [22]. Research work has proposed a novel approach for the Big Data process [23]. The approach is based on the Channel theory concept and HowNet structure. This was done for overcoming the Big Data conflicts. A case study was presented for showing the effectiveness of the proposed research under consideration. Research has studied coronavirus which is nowadays a big pandemic disease. A fractional-order epidemic model was used to show coronavirus dynamics. The effort was made for discussing the model’s existence through the fixed-point theorem of Banach and Krasnoselskii’s type [24]. The Ulam–Hyers type of stability of the given issue is discussed. The Laplace Adomian decomposition method was used for the semianalytical solution of the issues. The results were plotted in MATLAB for showing graphs. The results are compared with real data.

Research has considered accurately simulating the shock wave phenomenon and condensation at the final stage of steam turbine and hence influences the phenomenon. Various simulations were conducted through ANSYS fluent and $k$-omega SST turbine model. The results of the experiments were effective [25]. Nowadays, the digitalization processes of different entities all over the world are becoming challenging. Different individuals continuously produce data on websites. The research describes correlation from the user side, mean psychological indicator, and study footprints on social networks. Initially, experiments were conducted for a sequence of psychological predictions from different social networks based on data. Finally, the result of comparison from many social media to conduct analysis and finds out that the psychological relationships are equal on different social networks. Construct a relationship matrix between trait and psychology. The results show the changes in the qualitative productivity model. Once their primary models are stretched and adding data from other data sources, these are the same division. These are possible to investigate learning [26]. Research has proposed a new framework for detecting online error and its localization using a scheme online for localizing and detecting errors in sensor data through recent processing tools of Big Data. Different data sets were used for checking the performance
evaluation of the proposed research [27]. A study was presented in which the authors have reviewed the driving forces of Big Data and high-performance computing approaches used for brain science. Such approaches include power data analysis capabilities, deep learning, and solutions of computational performance. The work strengthens the prediction of data and high-performance computing which will carry on for improving brain science by making ultrahigh-performance analysis conceivable [28]. Information sizes in the power transmission grid have expanded quickly which has brought more difficulties. This information is enormous in volume, produced quickly, in various configuration, and come from different sources. Traditional relational databases are deficient as far as reaction time and have an impact on execution when applied to exceptionally huge informational indexes, and furthermore make this hard to advance as indicated by business needs. To address this deficiency, Big Data usage is utilizing new advancements, for example, NoSQL information stores. The study attempted to improve this cycle by displaying and preparing that information utilizing Neo4j information base and presents demonstrating and handling the information of intensity transmission framework substation which has two force transformers, and afterward adding another force transformer to reproduce the developing element of Neo4j information base as per the business needs [29]. Computational modeling courses and programs were reviewed for data science. A set of design principles for the integrative course was formed. These principles were individually implemented targeting students of graduate and upper-division undergraduate in the two public universities of the United States and Canada [30]. Data preparing is presently one of the most fundamental assignments. With the development and advancement of data and media, transmission innovations expanded the volume of information communicated over the Internet. At the same time, preparing an enormous measure of data brings up the issue of its insurance. The research suggests a dispersed distributed computation system dependent on the Big Data approach where both capacity and figuring assets can be scaled out to gather and deal with traffic from a huge scope network in a sensible time [31].

4. Artificial Intelligence and Big Data

Research has proposed a resilient and sustainable city planning which is a master data management solution for unlocking the value of big infrastructure data [32]. The master data management is implemented in the sector of business for orchestrating analytical and operational applications of Big Data. A case study is given on the transportation and building infrastructure of a particular community in Hong Kong. The best set of parameters was considered for analyzing data. Model for guidelines was considered as one of the big issues in examining Big Data. Results of the experiments revealed the importance of the process of data analysis. Selection of attributes and value of attributes were considered as a cause of low performance [33]. A method for indexing of heterogeneous cluster of data resources is proposed [34]. The authors proposed for the future that dynamic construction of indexing can be performed to reduce the complications in storing index during querying. The paper aims to solve the issue of not having enough information about a user in a data set. It is difficult to find the required information from Big Data for online users. The proposed system provides such information to online users. The method reduces the data size at the item level. Benefits of the method depend on the interest level of the online users. The results show improvement in inaccuracy [35]. The study has described a network model to manage information in all decision-making in Big Data. Bayesian network is used to handle huge amounts of IoT data. The research shows an empirical evaluation of the Bayesian network to handle Big Data in IoT applications. Comparisons were made between conventional and Bayesian network that shows optimal solution [36]. Another study was suggested is to provide security to cloud-enabled Big Data. A novel system architecture is proposed for security because the older cryptography algorithms were not sufficient for cloud base Big Data environments. In the future, the proposed system may be enhanced to speed up the encryption and decryption process [37].

Analyzing the knowledge behind Big Data and their incorporated upstream interpretation project is aimed at research [38]. Various artifacts for different constructs and models were expressed. Big Data with opportunities were expressed with business and data analytics which support manageable exploration and production systems. Petroleum management information systems and digital petroleum ecosystem were designed for establishing a link among different sources of data in several systems and domains. Implementing a strong approach establishes the importance of the incorporated upstream business in the industry of gas and oil that observe the Big Data characteristics. The research aims to find out the problem in a train moving at high speed with the help of using Big Data. High-speed trains are very faster, and once any fault may occur, it results in disasters. The framework uses cloud and edge computing with Big Data for train operations. The Hadoop framework is used with the MySQL database. The authors conclude that the proposed framework may save the lives of passengers by fault detection. In the future, TB-level data may be collected to more effectively implement the proposed framework [39]. The authors proposed a Big Data analytic architecture dynamic vehicle routing problem to minimize the total distance for dynamic vehicles. The authors described that the dynamic vehicle routing problem is combined with Spark cluster computing system for Big Data processing. The authors concluded that the proposed architecture is improved due to its capacity [40]. The determination of the research is to propose a Map-Reduce framework for improving the performance for monitoring fluoride-producing process using Big Data. The fluoride-producing process is highly critical to public safety. As hyper toxic materials are used in this process, advanced strategies are needed in monitoring the process using Big Data. The results achieved strongly proved the effectiveness of the time-varying monitoring process for fault detection and diagnosis. [41].
The research aims to combine simulation and Big Data in the supply chain using the SIMIO tool to enhance decision-making. The authors describe that the simulation was not smooth in all experiments that made it difficult to interact with the model. However, the simulation provides enough benefits for decision-making in the supply chain process. The authors suggest for future research that efforts should be made to refresh Big Data warehouses in real-time. Similarly, other simulation tools than SIMIO may be used to bring enough change in insights for obtained results [42]. The aim of the research is to combine next-generation sequencing with bioinformatics to improve and diagnose cancer therapy. According to the authors, AI and Big Data have a significant effect in many fields of the health sector. Especially in precision oncology and cancer diagnosis, next-generation sequencing has applications for the early detection of such diseases. AI-enhanced cancer diagnostics is performed with next-generation sequencing using high-resolution images. The authors concluded that AI has some limitations and challenges in clinical applications but is valid with next-generation sequencing. By improving the innovations and technology, AI and precision oncology will show promising results [43]. The research aimed to use Big Data in building energy efficiency. The information age has expanded radically in the course of recent years. One of the significant areas these days is the development area, particularly fabricating energy productivity fields. Gathering enormous measures of information, utilizing various types of huge information investigation can assist with improving development measures from the energy proficiency viewpoint [44]. The purpose of research is to use Big Data in food safety. Enormous data advancements were being created and actualized in the food production network that assembles and breaks down information. Such advances request new methodologies in information assortment, stockpiling, preparing, and information extraction. The authors concluded that their survey shows the utilization of Big Data in sanitation stays at its outset yet it is impacting the whole food production network. Large data examination was utilized to give prescient bits of knowledge in a few stages in the food inventory network, uphold store network entertainers in taking continuous choices, and plan the checking and inspecting systems [45].

5. Analyzing the Existing Literature for Decision-Making and Computational Modeling of Big Data

Computational modeling for decision-making is also a potent mechanism for providing efficient solutions for managing huge data for impactful applications. Research work was presented to use Big Data in multiblock data analysis. It proposed to change few components under various information transmission plans in a supercomputing environment. Depending on the setup, adopting information in a bigger number of centers speeds up the CPU usage [46]. A distributed system, like cloud computing and mobile computing, provides additional services to improve with an easy way of people’s lives around the globe. Cloud computing works on peer-to-peer concept and provides improved services and access to all servers with a click. It also clarifies that how rich and informative data on the cloud, the hybrid computer consistency is much accurate than traditional [47]. Cellular-based growth is present in urban cities. The new arrival and implementation of cellular services and networks are installed in cities are spread around the world. China’s infrastructure resources are important because of people’s concentration in urban areas. This scenario is based on conceptual and automata cellular models as a case study for the city of Changjiang Delta Region to improve and solve basic issues [48]. Novel COVID-19 is resulted as a global issue that caused high infection and is a threat [49]. The smart city concept is very common for the last two decades. The smart city concept is a monitoring-based city; smart city concept is implementable in many areas like car parking, movable object, robotics, and large-scale production. All the devices in the smart city are connected with each other. Research contributed to urban planning and developments policy [50]. Biological systems involve network and computational models for running the system. To analyze Big Data analytics to maximize scientific approaches of collecting biological data, the data should be pure and fair. The community of findable, accessible, interoperable, and reusable (AIRR) is a grassroots network, and the FAIR principles are linked with AIRR software and repositories [51]. Healthomics data are generated by IoT devices in the present era that is using machine-learning techniques and cloud computing to ensure and organize large scale of data; data are generated by default, using some good techniques for optimization [52]. The brain data model is a systematic science where data can judge and handle through artificial intelligence mechanisms; the entire research is based on an in-depth data framework and Big Data analytics. The data-brain also support advanced technique to connect the world with random data. The data-brain model is a conceptual framework with full guidelines to manage and analyze data-brain analytics [53]. The authors have identified the walking speed effect on heat stress. The heat stress optimal walking speed is defined and estimated its value for air temperature wide range through computational modeling of thermal regulation and metabolic heat production. Experimental results suggested that diverse temperature regimes need walking speed adaptation for preserving heat balance [54]. The study has discussed how technologies of single-cell facilitate the appropriate framework for computational modeling at diverse biological organization scales for addressing challenges in the field of stem cells and to guide the analyst in the designing of novel approaches for treatment of congenital disorder and stem cell therapies [55]. Various studies are part of the literature which has described Big Data [56, 57].

DSS is a robust system that plays a substantial role in influencing Big Data for supporting efficiency and performance. Decision-making plays a significant role in any field of life. Based on decision-making, one can easily decide what
to do with situations that are complex and uncertain, so the proposed study has considered a decision support system for the area of research. This study contribution is to present the decision-making and computational modeling of Big Data for sustaining influential usage. The prevailing state-of-the-art collected works are presented in a planned way to examine the existing research in the area. The existing literature was analysed to reveal the specifics of the literature in terms of conference papers, journal articles, year of publication, number of publications, and so on. In addition, evidence from the literature was gathered, which the researchers will use to develop new solutions. Various searching libraries were used to support the study process. The search query was defined in order to get optimum results. The keywords "decision-making", "computational modeling", and "big data" were used as searching words. The total search results are depicted in Figure 1. From the figure, it is shown that more results of the search were obtained in the ScienceDirect library followed by Springer, and so on.

Initially, the ACM library was considered for the search process. The results obtained for the search of publications with types of materials are shown in Figure 2.

It was determined to find out the details of the conference held. Figure 3 describes the details of the conference held in the given library.

The analysis consists of the conference sponsors as well. The details of conferences sponsors are shown in Figure 4.

The details of the media format are given in Figure 5.

The contents types in this library are demonstrated in Figure 6.

Next, the IEEE library was tried and the results of a search for types of articles are given in Figure 7. The figure depicts that more papers are published as a conference category.

It was desired that the publication topics be searched in the given library. Figure 8 depicts the topics of publications.

Keeping in view the details of publication history, the publishers’ information was gathered and is given in Figure 9.

The conference location with publication is given in Figure 10.

The ScienceDirect library was considered as part of the search process, and the details of the number of papers with article type in this library are given in Figure 11.

The publication year with a total of papers is presented in Figure 12.

The title of publications was considered a significant part of the search strategy. The details are given in Figure 13.

Figure 14 depicts the subject areas with the number of papers.

The Springer library was taken under consideration as this library publications more quality and peer-reviewed materials and are having more journals and conferences with high repute. Figure 15 represents the total contents in the library.

The language used for paper writing is given in Figure 16.

Figure 17 shows the disciplines of the materials published in the given library.
Figure 4: Conference sponsors with the details of papers.

Figure 5: Media format with publications.

Figure 6: Type of content with papers.
Finally, Wiley Online was searched, and the results of the search process were shown in various figures. Figure 18 represents the topic of the publication along with the percentages of the publications in this library.

In the given library, the subject areas are shown in Figure 19. The paper published with total publications is depicted in Figure 20.
Figure 9: Details of publishers with a total of papers.

Figure 10: Conference locations with publications.

Figure 11: Number of papers with article types.
Figure 12: Publication years with a total of papers.

Figure 13: Title of publication with their total of papers.
Figure 14: The subject area of publication with papers.

Figure 15: Total of content with their type.

Figure 16: Language of publications and total of paper.
Figure 17: The discipline of papers and total of papers.

Figure 18: Publication type and percentage of papers.

Figure 19: Subject areas and papers.
6. Conclusion

Huge assumptions and advances in a variety of broad and longitudinal data on many platforms bring about a lot of large information. This upsurge will give birth to indeterminate and complex situations which will then be difficult to analyze and manage. Big Data is that whose shape and volume are growing with the passage of time and innovations in technology. A massive volume of data is formed, and the storage becomes widened. Numerous smart devices are connected with each other communicating different types of information, and this information is used for diverse commitments. Computational modeling is the tool that helps to analyze, process, and manage such types of data. The procedure and models are distributed with guidelines to help analysts quickly fit models to information insights. DSS is a robust system that plays an important role in shaping Big Data for sustaining efficiency and performance. This study has deliberated to present the decision-making and computational modeling of Big Data for sustaining influential usage. The current state-of-the-art gathered works are presented in a systematic manner to analyze current research in the field. The existing literature was analysed to reveal the specifics of the literature in terms of conference papers, journal articles, year of publication, number of publications, and so on. In addition, the researchers gathered facts from the literature to help them come up with innovative ideas. The study process was aided by the usage of a variety of searching libraries.

Data Availability

The data will be provided upon request.

Conflicts of Interest

The authors declare that they have no conflicts of interest.

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References

[1] H. Geerts, P. A. Dacks, V. Devanarayan et al., “Big data to smart data in Alzheimer’s disease: the brain health modeling initiative to foster actionable knowledge,” *Alzheimer’s and Dementia*, vol. 12, no. 9, pp. 1014–1021, 2016.
[2] M. Jalal, R. Moradi-Dastjerdi, and M. Bidram, “Big data in nanocomposites: ONN approach and mesh-free method for functionally graded carbon nanotube-reinforced composites,” *Journal of Computational Design and Engineering*, vol. 6, no. 2, pp. 209–223, 2019.
[3] J. Saez-Rodriguez, M. M. Rinschen, J. Floege, and R. Kramann, “Big science and big data in nephrology,” *Kidney International*, vol. 95, no. 6, pp. 1326–1337, 2019.
[4] C. K. Dehury, S. N. Srirama, and T. R. Chhetri, “CCoDaMiC: a framework for coherent coordination of data migration and computation platforms,” *Future Generation Computer Systems*, vol. 109, pp. 1-16, 2020.
[5] W. Ma, X. Pi, and S. Qian, “Estimating multi-class dynamic origin-destination demand through a forward-backward algorithm on computational graphs,” *Transportation Research Part C: Emerging Technologies*, vol. 119, Article ID 102747, 2020.
[6] A. J. Smith and K. M. Powell, “fault detection on big data: a novel algorithm for clustering big data to detect and diagnose faults,” *IFAC-PapersOnLine*, vol. 52, no. 10, pp. 328–333, 2019.
[7] C. Zhang, A. Romagnoli, L. Zhou, and M. Kraft, “From numerical model to computational intelligence: the digital
transition of urban energy system,” *Energy Procedia*, vol. 143, pp. 884–890, 2017.
[8] S. Nazir, M. Nawaz, A. Adnan, S. Shahzad, and S. Asadi, “Big data features, applications, and analytics in cardiology-A systematic literature review,” *IEEE Access*, vol. 7, no. 1, Article ID 143742, 2019.
[9] S. Nazir, S. Khan, H. U. Khan et al., “A comprehensive analysis of healthcare big data management, analytics and scientific programming,” *IEEE Access*, vol. 8, Article ID 95714, 2020.
[10] Y. Yang, S. U. Islam, A. Noor, S. Khan, W. Afsar, and S. Nazir, “Influential usage of big data and artificial intelligence in healthcare,” *Computational and Mathematical Methods in Medicine*, vol. 2021, Article ID 5812499, 2021.
[11] V. Weerakkody, U. Sivarajah, K. Mahroof, T. Maruyama, and S. Lu, “Influencing subjective well-being for business and sustainable development using big data and predictive regression analysis,” *Journal of Business Research*, 2020.
[12] P. Zhang, X. Huang, and L. Zhang, “Information mining and similarity computation for semi-/un-structured sentences from the social data,” *Digital Communications and Networks*, 2020.
[13] M. A. Irvine and T. D. Hollingsworth, “Kernel-density estimation and approximate Bayesian computation for flexible epidemiological model fitting in Python,” *Epidemics*, vol. 25, pp. 80–88, 2018.
[14] Z. Irani, A. M. Sharif, H. Lee et al., “Managing food security through food waste and loss: small data to big data,” *Computers & Operations Research*, vol. 98, pp. 367–383, 2018.
[15] J. Sung, V. Hale, A. C. Merkel, P.-J. Kim, and N. Chia, “Metabolic modeling with Big Data and the gut microbiome,” *Applied & Translational Genomics*, vol. 10, pp. 10–15, 2016.
[16] Y. Fu, F. Song, and L. Zhu, “Modeling and implementation of an asynchronous approach to integrating HPC and big data analysis 1,” *Procedia Computer Science*, vol. 80, pp. 52–62, 2016.
[17] S. L. Nimmagadda, T. Reiners, and L. C. Wood, “On modelling big data guided supply chains in knowledge-base geographic information systems,” *Procedia Computer Science*, vol. 159, pp. 1155–1164, 2019.
[18] V. Kellengere Shankarnarayan and H. Ramakrishna, “Paradigm change in Indian agricultural practices using Big Data: challenges and opportunities from field to plate,” *Information Processing in Agriculture*, vol. 7, no. 3, pp. 355–368, 2020.
[19] C. A. Escobar, J. A. Abell, M. Hernández-de-Menéndez, and R. Morales-Menéndez, “Process-Monitoring-for-Quality - big models,” *Procedia Manufacturing*, vol. 26, pp. 1167–1179, 2018.
[20] B. Chen, Q. Zeng, and Z. Cheng, “Quasi-holography computational model for urban computing,” *Visual Informatics*, vol. 3, no. 2, pp. 81–86, 2019.
[21] A. N. Raikov, Z. Avdeeva, and A. Ermakov, “Big data refining on the base of cognitive modeling,” *IFAC-PapersOnLine*, vol. 49, no. 32, pp. 147–152, 2016.
[22] V. C. Storey and I.-Y. Song, “Big data technologies and Management: what conceptual modeling can do,” *Data & Knowledge Engineering*, vol. 108, pp. 50–67, 2017.
[23] W. Li and C. Yang, “Combining Channel theory, HowNet and extension model to analyze big data,” *Procedia Computer Science*, vol. 91, pp. 452–459, 2016.
[24] M. Sher, K. Shah, Z. A. Khan, H. Khan, and A. Khan, “Computational and theoretical modeling of the transmission dynamics of novel COVID-19 under Mittag-Leffler Power Law,” *Alexandria Engineering Journal*, vol. 59, no. 5, pp. 3133–3147, 2020.
[25] A. M. Nagib Elmekawy and M. E. H. H. Ali, “Computational modeling of non-equilibrium condensing steam flows in low-pressure steam turbines,” *Results in Engineering*, vol. 5, Article ID 100065, 2020.
[26] I. Deeva, “Computational personality prediction based on digital footprint of A social media user,” *Procedia Computer Science*, vol. 156, pp. 185–193, 2019.
[27] G. P. Gupta and J. Khedwal, “Framework for error detection & its localization in sensor data stream for reliable big sensor data analytics using Apache Spark streaming,” *Procedia Computer Science*, vol. 167, pp. 2337–2342, 2020.
[28] S. Chen, Z. He, X. Han et al., “How big data and high-performance computing drive brain science,” *Genomics, Proteomics & Bioinformatics*, vol. 17, no. 4, pp. 381–392, 2019.
[29] A. P"ercuku, D. Minkovska, and L. Stoyanova, “Modeling and processing big data of power transmission grid substation using Neo4j,” *Procedia Computer Science*, vol. 113, pp. 9–16, 2017.
[30] P. J. Giabbanelli and V. K. Mago, “Teaching computational modeling in the data science era,” *Procedia Computer Science*, vol. 80, pp. 1968–1977, 2016.
[31] L. U. Laboshin, A. A. Lukashin, and V. S. Zaborovsky, “The big data approach to collecting and analyzing traffic data in large scale networks,” *Procedia Computer Science*, vol. 103, pp. 536–542, 2017.
[32] S. T. Ng, F. J. Xu, Y. Yang, and M. Lu, “A master data management solution to unlock the value of big infrastructure data for smart, sustainable and resilient city planning,” *Procedia Engineering*, vol. 196, pp. 939–947, 2017.
[33] M. Mohamad, A. Selamat, O. Krejcar, H. Fujita, and T. Wu, “An analysis on new hybrid parameter selection model performance over big data set,” *Knowledge-Based Systems*, vol. 192, Article ID 105441, 2020.
[34] M. M. Nashipudimath, S. K. Shinde, and J. Jain, “An efficient integration and indexing method based on feature patterns and semantic analysis for big data,” *Array*, vol. 7, pp. 100033, 2020.
[35] P. S. Sundari and M. Subaji, “An Improved Hidden Behavioral Pattern Mining Approach to Enhance the Performance of Recommendation System in a Big Data Environment,” *Journal of King Saud University - Computer and Information Sciences*, 2020.
[36] S. Farhana, M. M. Billah, Z. M. Yusof, and K. Kadir, “An optimal algorithm to resolve the impact of big data in IoT application using bayesian network,” *Procedia Computer Science*, vol. 163, pp. 603–608, 2019.
[37] U. Narayanan, V. Paul, and S. Joseph, “A Novel System Architecture for Secure Authentication and Data Sharing in Cloud Enabled Big Data Environment,” *Journal of King Saud University - Computer and Information Sciences*, 2020.
[38] S. L. Nimmagadda, T. Reiners, and A. Rudra, “An upstream business data science in a big data perspective,” *Procedia Computer Science*, vol. 112, pp. 1881–1890, 2017.
[39] Q. Xu, P. Zhang, W. Liu et al., “A platform for fault diagnosis of high-speed train based on big data,” *IFAC-PapersOnLine*, vol. 51, no. 18, pp. 309–314, 2018.
[40] I. Sbai and S. Krichen, “A real-time decision support system for big data analytic: a case of dynamic Vehicle routing problems,” *Procedia Computer Science*, vol. 176, pp. 938–947, 2020.
[41] X. Li, F. Xue, L. Qin et al., “A recursively updated Map-Reduce based PCA for monitoring the time-varying fluorochemical engineering processes with big data,” *Chemometrics and Intelligent Laboratory Systems*, vol. 206, Article ID 104167, 2020.
[42] A. A. C. Vieira, L. Dias, M. Y. Santos, G. A. B. Pereira, and J. Oliveira, "Are simulation tools ready for big data? Computational experiments with supply chain models developed in Simio," Procedia Manufacturing, vol. 42, pp. 125–131, 2020.

[43] Z. Dlamini, F. Z. Francies, R. Hull, and R. Marima, "Artificial intelligence (AI) and big data in cancer and precision oncology," Computational and Structural Biotechnology Journal, vol. 18, pp. 2300–2311, 2020.

[44] N. Koseleva and G. Ropaite, "Big data in building energy efficiency: understanding of big data and main challenges," Procedia Engineering, vol. 172, pp. 544–549, 2017.

[45] C. Jin, Y. Bouzembrak, J. Zhou et al., "Big Data in food safety- A review," Current Opinion in Food Science, vol. 36, pp. 24–32, 2020.

[46] A. Martinez-Ruiz and C. Montañola-Sales, "Big data in multi-block data analysis: an approach to parallelizing Partial Least Squares Mode B algorithm," Heliyon, vol. 5, no. 4, 2019.

[47] L. a. a. Tawalbeh and G. Saldamli, "Reconsidering Big Data Security and Privacy in Cloud and mobile Cloud Systems," Journal of King Saud University - Computer and Information Sciences, 2019.

[48] C. Guan and P. G. Rowe, "Should big cities grow? Scenario-based cellular automata urban growth modeling and policy applications," Journal of Urban Management, vol. 5, no. 2, pp. 65–78, 2016.

[49] L. Rui, L. Haonan, and C. Wanyi, "Silico analysis of interaction between full-length SARS-CoV2 S protein with human Ace2 receptor: modelling, docking, MD simulation," Biophysical Chemistry, vol. 267, Article ID 106472, 2020.

[50] C. Lim, K.-J. Kim, and P. P. Maglio, "Smart cities with big data: reference models, challenges, and considerations," Cities, vol. 82, pp. 86–99, 2018.

[51] J. K. Scott and F. Breden, "The adaptive immune receptor repertoire community as a model for FAIR stewardship of big immunology data," Current Opinion in Structural Biology, vol. 24, pp. 71–77, 2020.

[52] A. Antonakoudis, R. Barbosa, P. Kotidis, and C. Kontoravdi, "The era of big data: genome-scale modelling meets machine learning," Computational and Structural Biotechnology Journal, vol. 18, pp. 3287–3300, 2020.

[53] H. Kuai and N. Zhong, "The extensible Data-Brain model: architecture, applications and directions," Journal of Computational Science, vol. 46, Article ID 101103, 2020.

[54] V. R. Melnikov, V. V. Krzhizhanovskaya, M. H. Lees, and P. M. A. Sloot, "The impact of pace of life on pedestrian heat stress: a computational modelling approach," Environmental Research, vol. 186, Article ID 109397, 2020.

[55] A. del Sol and S. Jung, "The importance of computational modeling in stem cell research," Trends in Biotechnology, vol. 39, no. 2, pp. 126–136, 2020.

[56] X. Chu, S. Nazir, K. Wang, Z. Leng, and W. Khalil, "Big Data and its V’s with IoT to Develop Sustainability," Scientific Programming, vol. 2021, Article ID 3780594, 2021.

[57] W. He, S. Nazir, and Z. Hussain, "Big data insights and comprehensions in industrial healthcare: an overview," Mobile Information Systems, vol. 2021, pp. 1–11, Article ID 6628739, 2021.