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Abstract

Earth monitoring systems are of crucial significance to the arena nowadays as they offer us essential data on this planet's environment, sources, and ecosystems. In earth monitoring structures, information-driven selection making is the process of utilizing facts-pushed techniques to inform selections regarding the real-time monitoring and control of natural disasters and other environmental phenomena. These objectives span the spectrum of decision-making, starting with the pursuit of informed choices that are grounded in accurate data and bolstered by objectivity. The capability of modeling strategies and this approach fosters collaborative problem-solving by facilitating the sharing of data and insights among stakeholders, aligning common objectives and shared expertise to inform the decision-making process, ultimately elevating the quality and efficiency of decisions in response to evolving environmental challenges. In conclusion, understanding extraction from earth monitoring structures is an essential system for assisting decision making via using statistics-driven techniques.

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1. Introduction

Earth monitoring systems are of crucial significance to the arena nowadays as they offer us essential data on this planet's environment, sources, and ecosystems. Even as some conventional methods of accumulating, storing, and studying such information have been in use for some time, the current creation of understanding-driven decision-making in earth tracking structures has revolutionized the manner in which we degree, reveal, and impact changes within the environment (Horn & Isselstein, 2022).

Knowledge-driven decision-making is a form of artificial intelligence (AI) that makes use of information from traditional resources, together with satellite photographs and floor surveys, as well as digital resources inclusive of weather facts, soil moisture readings, and vegetation growth developments. Via combining this enormous range of facts sources, effective selections may be made about how high-quality to manipulate the environment over a long period (Wu et al., 2022; Zhang et al., 2023).

The choices made via these systems must be both sound and accountable. To achieve this, AI algorithms are used to pick out trends inside the information and formulate powerful techniques to address the regularly complex environmental problems we are confronted with (Yu et al., 2023). As an example, the facts may additionally monitor that certain areas are experiencing a speedy decline in water stages because of immoderate water usage. AI algorithms can then be applied to investigate the records and expand an appropriate response, which includes an environmental conservation mission, to deal with the problem and ensure lengthy-time period sustainability.

As a result of the integration of AI with earth tracking systems, complicated decisions can now be made in minutes that used to take weeks or even months, leading to quicker and more accurate choices. Furthermore, because these systems can store large volumes of information in a shorter time frame, they also can identify problems that may have otherwise gone unnoticed (Abdelkareem & Mansour, 2023). With the assistance of information-driven selection-making, earth structures can now be better managed, and the surroundings are better blanketed on a worldwide scale.

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References

Follow Reference Abdelkareem M. Mansour A. M. (2023). Risk assessment and management of vulnerable areas to flash flood hazards in arid regions using remote sensing and GIS-based knowledge-driven techniques.Natural Hazards, 117(3), 2269–2295. 10.1007/s11069-023-05942-x

Follow Reference Aldana-Martín J. F. García-Nieto J. del Mar Roldán-García M. Aldana-Montes J. F. (2022). Semantic modelling of earth observation remote sensing.Expert Systems with Applications, 187, 115838. 10.1016/j.eswa.2021.115838

Follow Reference Chen J. Lu W. Fu Y. Dong Z. (2023). Automated facility inspection using robotics and BIM: A knowledge-driven approach.Advanced Engineering Informatics, 55, 101838. 10.1016/j.aei.2022.101838

Follow Reference Chudasama B. Torppa J. Nykänen V. Kinnunen J. Lerssi J. Salmirinne H. (2022). Target-scale prospectivity modeling for gold mineralization within the rajapalot Au-Co project area in northern Fennoscandian Shield, Finland. Part 1: Application of knowledge-driven-and machine learning-based-hybrid-expert systems for exploration targeting and addressing model-based uncertainties.Ore Geology Reviews, 147, 104937. 10.1016/j.oregeorev.2022.104937

Follow Reference Daviran M. Parsa M. Maghsoudi A. Ghezelbash R. (2022). Quantifying uncertainties linked to the diversity of mathematical frameworks in knowledge-driven mineral prospectivity mapping.Natural Resources Research, 31(5), 2271–2287. 10.1007/s11053-022-10089-w

Follow Reference Falkenström E. Svallfors S. (2022). The knowledge–management complex: From quality registries to national knowledge-driven management in Swedish health care governance.Politics & Policy, 50(5), 1053–1066. 10.1111/polp.12497

Follow Reference Horn J. Isselstein J. (2022). How do we feed grazing livestock in the future? A case for knowledge-driven grazing systems.Grass and Forage Science, 77(3), 153–166. 10.1111/gfs.12577

Follow Reference Hu M. Wu B. Zhou W. Wu H. Li G. Lu J. Yu G. Qin Y. (2022). Self-driving shield: Intelligent systems, methodologies, and practice.Automation in Construction, 139, 104326. 10.1016/j.autcon.2022.104326

Follow Reference Huang, L., Sun, R., Cheng, N., Hui, Y., & Liang, D. (2023, March). Delay-Oriented Knowledge-Driven Resource Allocation in SAGIN-Based Vehicular Networks. In *2023 IEEE Wireless Communications and Networking Conference (WCNC)* (pp. 1-6). IEEE. 10.1109/WCNC55385.2023.10118888

Follow Reference Jabla R. Khemaja M. Buendia F. Faiz S. (2022). A knowledge-driven activity recognition framework for learning unknown activities.Procedia Computer Science, 207, 1871–1880. 10.1016/j.procs.2022.09.245

Follow Reference Jiang Y. Yang G. Li H. Zhang T. (2023). Knowledge driven approach for smart bridge maintenance using big data mining.Automation in Construction, 146, 104673. 10.1016/j.autcon.2022.104673

Follow Reference Joshi V. Biswakarma P. (2023). Bivariate statistical method and knowledge driven heuristic approach for the comparison of landslide susceptibility mapping in the Alaknanda Catchment area.Indian Journal of Geosciences, 77(1), 71–106.

Follow Reference Li J. Zhou G. Zhang C. (2022). A twin data and knowledge-driven intelligent process planning framework of aviation parts.International Journal of Production Research, 60(17), 5217–5234. 10.1080/00207543.2021.1951869

Follow Reference Özdemir , A. (2022). Data-And Knowledge-Driven Smart City Strategies: Research On Implementation Challenges Of Local Governments In Turkey.Journal of Management and Economics Research, 20(3), 152–169.

Follow Reference Pant G. Bahuguna R. Pandey S. Gehlot A. Yadav S. P. Pachauri R. K. (2023, April). Intelligent Automated Interference for the Protection of Road Safety. In 2023 International Conference on Computational Intelligence, Communication Technology and Networking (CICTN) (pp. 87-91). IEEE.10.1109/CICTN57981.2023.10141086

Follow Reference Parveen H. Rizvi S. W. A. Shukla P. K. (2023). Disease risk level prediction based on knowledge driven optimized deep ensemble framework.Biomedical Signal Processing and Control, 79, 103991. 10.1016/j.bspc.2022.103991

Follow Reference Rødven R. Wilson S. (2022). Combining Knowledge for a Sustainable Arctic–AMAP Cases as Knowledge Driven Science-Policy Interactions. In Building Common Interests in the Arctic Ocean with Global Inclusion (Vol. 2, pp. 137–150). Springer International Publishing. 10.1007/978-3-030-89312-5_9

Follow Reference Salama R. Al-Turjman F. Bhatia S. Yadav S. P. (2023, April). Social engineering attack types and prevention techniques-A survey. In 2023 International Conference on Computational Intelligence, Communication Technology and Networking (CICTN) (pp. 817-820). IEEE.10.1109/CICTN57981.2023.10140957

Taktak, H., Ghedira, C., Boukadi, K., Mrissa, M., & Gargouri, F. (2022). *Knowledge-Driven Automatic Solution for Service Composition based on ELECTRE III and Quality-Aware Service Selection for the Wildfire Prediction*.

Follow Reference Teng F. Zhu Y. Zhang E. Hu X. Sun Q. Feng L. (2023, July). A knowledge service framework for fault diagnosis of low-earth orbit satellite constellation. In 2023 IEEE International Conference on Web Services (ICWS) (pp. 669-676). IEEE.10.1109/ICWS60048.2023.00085

Follow Reference Wu P. Wang P. Chi H. L. Zhong Y. Song Y. (2022). Exploring Factors Affecting Transport Infrastructure Performance: Data-Driven Versus Knowledge-Driven Approaches.IEEE Transactions on Intelligent Transportation Systems, 23(12), 24714–24726. 10.1109/TITS.2022.3192895

Follow Reference Xiong B. Jin Y. Li F. Chen Y. Zou Y. Zhou Z. (2023). Knowledge-driven inference for automatic reconstruction of indoor detailed as-built BIMs from laser scanning data.Automation in Construction, 156, 105097. 10.1016/j.autcon.2023.105097

Follow Reference Yu G. Lin D. Wang Y. Hu M. Sugumaran V. Chen J. (2023). Digital Twin-enabled and Knowledge-driven decision support for tunnel electromechanical equipment maintenance.Tunnelling and Underground Space Technology, 140, 105318. 10.1016/j.tust.2023.105318

Follow Reference Zhang W. Guo S. Zhang P. Xia Z. Zhang X. Lin C. Tang P. Fang H. Du P. (2023). A novel knowledge-driven automated solution for high-resolution cropland extraction by cross-scale sample transfer.IEEE Transactions on Geoscience and Remote Sensing, 61, 1–16. 10.1109/TGRS.2023.3299956

Follow Reference Zhou, X., Kouzel, M., & Alemzadeh, H. (2022, June). Robustness testing of data and knowledge driven anomaly detection in cyber-physical systems. In *2022 52nd Annual IEEE/IFIP International Conference on Dependable Systems and Networks Workshops (DSN-W)* (pp. 44-51). IEEE. 10.1109/DSN-W54100.2022.00017