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Calculate the molar specific heat of sodium chloride using the Debye model

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Abstract

The Debye model for specific heat was studied on sodium chloride in its condensed state, which is considered an inorganic material. The main objective of this research is to determine the behavior of the molar specific heat of sodium chloride (NaCl) as a function of absolute temperature. The Debye temperature for sodium chloride was found to be 277.5 K. Additionally, the curve of molar specific heat as a function of absolute temperature can be plotted with the help of computer programming in MATLAB. The crystal structure of sodium chloride is in the form of colorless crystals in its solid state. This crystal belongs to the face-centered cubic system, and the crystalline structure of sodium chloride can be considered as consisting of two interpenetrating face-centered cubic sublattices, one for sodium ions and the other for chloride ions. These two sublattices are displaced relative to each other by half the length of the cube's side.

Keywords: Sodium chloride, Debye model, Debye temperature, specific heat, primitive cell

References

[1] محمد حسن جغلاف، "طاقات الانصهار وعلاقتها بطاقات الارتباط في المواد الصلبة"، رسالة ماجستير في الفيزياء الصلبة، قسم الفيزياء، كلية العلوم، جامعة طرابلس، ليبيا، 2014م.

[2] محمد علي معتوق، "دراسة بعض البلورات الجزيئية والأيونية باستخدام أطياف رامان وتقنية الأمواج فوق السمعية"، رسالة الدكتوراة في الفيزياء الصلبة، قسم الفيزياء، كلية العلوم، جامعة "ويلز" بكاردف، المملكة المتحدة "بريطانيا"، 1987م.

[3] إسماعيل، فيزياء الحالة الصلبة 2007.

[4] C. Kittel, "Introduction to solid state physics", 7th Edition, John wiley & sons, Inc, New York, U.S.A., 1996.

[5] M. Razeghi, "Fundamentals of solid-state engineering", 2nd Edition, ISBN 10: 0-387-28152-5, ISBN 13: 978-0-387-28152-0, Inc., Evanston, USA, Library of Congress Control Number: 2005937004, Springer Science + Business Media, 2006.

[6] M. W. Zemansky and R. H. Dittman, "Heat and thermodynamics", 5th Edition, McGRAW-HILL Book Company, New York, 1981.

[7] M. W. Zemansky and R. H. Dittman, "Heat and thermodynamics", 5th Edition, McGRAW-HILL Book Company, New York, 1981.

[8] I. Nasser, "Specific heat of solids", Chapter 15, 2012.

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Innovative Pedagogical Approaches for Enhancing Scientific Literacy in Public Science Education

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Abstract

This study explores innovative pedagogical approaches aimed at enhancing scientific literacy in public science education. By exploring contemporary teaching methods and their impact on students' understanding and application of scientific concepts, the study highlights the importance of integrating interdisciplinary techniques, technology-enhanced learning, and experiential activities. The research underscores the role of educators in fostering a learning environment that encourages critical thinking, problem-solving, and effective communication of scientific ideas. Through a comprehensive review of existing literature and case studies, this paper provides insights into best practices and practical strategies for educators to implement in their classrooms to promote scientific literacy.

Keywords: Scientific Literacy, Public Science Education, Pedagogical approaches, Interdisciplinary Techniques, Experiential Learning

References

[1] Barford, J. (1997). Science teachers in sub-Saharan Africa: A focus for continuing education. In I. N. Shendeley & K. St. Vincent Buccini (Eds.), Technology and science education for the 21st century (pp. 177-180). Clifton, VA: IAITO.

[2] Bishop, R. (1994). Prejudice learning and classroom interactions. Education and Science, 20, 12-28.

[3] Bybee, R. W. (2014). The BSCS 5E Instructional Model: Personal reflections and contemporary implications. Science & Education, 24(5-6), 543-564. https://doi.org/10.1007/s11191-014-9738-3

[4] Crawford, B. A. (2014). From inquiry to scientific practices in the science classroom. Science Education, 98 (1), 189-217. https://doi.org/10.1002/sce.21104

[5] García-Sánchez, I. M., & García-Serrano, J. (2019). Innovative pedagogical practices in higher education: A literature review. Sustainability, 11 (12), 3333. https://doi.org/10.3390/su11123333

[6] Holbrook, J., & Rannikmae, M. (2009). The meaning of scientific literacy. International Journal of Environmental and Science Education, 4 (3), 275-288. https://eric.ed.gov/?id=EJ884398

[7] Honey, M., & Hilton, M. (2011). Learning science through computer games and simulations. National Academies Press.

[8] Kirschner, P. A., Sweller, J., & Clark, R. E. (2006). Why minimal guidance during instruction does not work: An analysis of the failure of constructivist, discovery, problem-based, experiential, and inquiry-based teaching. Educational Psychologist, 41 (2), 75-86. https://doi.org/10.1207/s15326985ep4102_1

[9] Krajcik, J. S., & Shin, N. (2014). Project-based learning. In R. K. Sawyer (Ed.), The Cambridge Handbook of the Learning Sciences (2nd ed., pp. 275-297). Cambridge University Press.

[10] National Research Council. (2012). A framework for K-12 science education: Practices, crosscutting concepts, and core ideas. National Academies Press. https://doi.org/10.17226/13165

[11] Prince, M. (2004). Does active learning work? A review of the research. Journal of Engineering Education, 93 (3), 223-231. https://doi.org/10.1002/j.2168-9830.2004.tb00809.x

[12] Sandoval, W. A. (2005). Understanding students' practical epistemologies and their influence on learning through inquiry. Science Education, 89 (4), 634-656. https://doi.org/10.1002/sce.20065

[13] Wieman, C. (2012). Applying new research to improve science education. Issues in Science and Technology, 29 (1), 25-32. https://www.jstor.org/stable/43315629

[14] World Health Organization. (2020). Coronavirus disease (COVID-19) pandemic. Retrieved October 3, 2023, from https://www.who.int/emergencies/diseases/novel-coronavirus-2019

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Exploring the Role of Language in Neural Processing and Moral Judgment: A Cognitive Neuroscience Perspective

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Abstract

This study provides advanced neural techniques to investigate the role of language in the human brain to address linguistic relativity and linguistic determinism. It examines how these concepts affect human reasoning and the acquisition of moral codes. Moreover, this study focuses on the brain activity associated with the real-time processing model that predicts changes in brain activity based on word comprehension and connects linguistic neuroscience by combining insights from neuro-linguistics and neuropsychology to reveal the neural systems involved in the processing of moral rules and how the brain acquires and maintains moral knowledge. This research extends to the development of implants, tools for ethical design, and the search for ethics and legitimacy in human psychology.

Keywords: Neural Processing, Cognition, Linguistic relativity, Neuropsychology, Moral knowledge.

References

[1] Andrews, J. P., Cahn, N., Speidel, B. A., Chung, J. E., Levy, D. F., Wilson, S. M., ... & Chang, E. F. (2022). Dissociation of Broca’s area from Broca’s aphasia in patients undergoing neurosurgical resections. Journal of Neurosurgery, 138 (3), 847-857. https://thejns.org

[2] Awad, E., Dsouza, S., & Shariff, A. (2020). Universals and variations in moral decisions made in 42 countries by 70,000 participants. Proceedings of the National Academy of Sciences, 119 (6), e2108091119. https://pnas.org

[3] Barack, D. L., & Krakauer, J. W. (2021). Two views on the cognitive brain. Nature Reviews Neuroscience. https://philpapers.org

[4] Barsalou, L. W. (2020). Challenges and opportunities for grounding cognition. Journal of Cognition. https://nih.gov

[5] Braga, R. M., DiNicola, L. M., Becker, H. C., & Buckner, R. L. (2020). Situating the left-lateralized language network in the broader organization of multiple specialized large-scale distributed networks. Journal of Neurophysiology, 124 (5), 1415-1448. https://physiology.org

[6] Bretl, B. L. (2021). Neural and linguistic considerations for assessing moral intuitions using text-based stimuli. The Journal of Psychology.

[7] Diamond, A. S. (2023). The history and origin of language.

[8] Esfahlani, F. Z., Jo, Y., Puxeddu, M. G., Merritt, H., Tanner, J. C., Greenwell, S., ... & Betzel, R. F. (2021). Modularity maximization as a flexible and generic framework for brain network exploratory analysis. Neuroimage, 244, 118607. https://sciencedirect.com

[9] Farrow, K., Grolleau, G., & Mzoughi, N. (2021). 'Let's call a spade a spade, not a gardening tool': How euphemisms shape moral judgement in corporate social responsibility domains. Journal of Business Research. https://sciencedirect.com

[10] Fedorenko, E., Ivanova, A. A., & Regev, T. I. (2024). The language network as a natural kind within the broader landscape of the human brain. Nature Reviews Neuroscience. https://researchgate.net

[11] Fernandino, L., Tong, J. Q., Conant, L. L., Humphries, C. J., & Binder, J. R. (2022). Decoding the information structure underlying the neural representation of concepts. Proceedings of the National Academy of Sciences, 119 (6), e2108091119. https://pnas.org

[12] Futrell, R., Gibson, E., & Levy, R. P. (2020). Lossy-context surprisal: An information-theoretic model of memory effects in sentence processing. Cognitive Science. https://wiley.com

[13] Gordon, E. M., Chauvin, R. J., Van, A. N., Rajesh, A., Nielsen, A., Newbold, D. J., & Dosenbach, N. U. (2023). A somato-cognitive action network alternates with effector regions in motor cortex. Nature, 617 (7960), 351-359. https://nature.com

[14] Hage, J. (2020). Two kinds of normativity. Contemporary Perspectives on Legal Obligation. https://academia.edu

[15] Hinojosa, J. A., Moreno, E. M., & Ferré, P. (2020). Affective neurolinguistics: Towards a framework for reconciling language and emotion. Language, Cognition and Neuroscience, 35 (7), 813-839. https://uned.es

[16] Jafari, Z., Kolb, B. E., & Mohajerani, M. H. (2021). Age-related hearing loss and cognitive decline: MRI and cellular evidence. Annals of the New York Academy of Sciences, 1500 (1), 17-33.

[17] Jin, Z., Levine, S., Gonzalez Adauto, F., Kamal, O., Sap, M., Sachan, M., ... & Schölkopf, B. (2022). When to make exceptions: Exploring language models as accounts of human moral judgment. Advances in Neural Information Processing Systems, 35, 28458-28473. https://neurips.cc

[18] Kennedy, B., Atari, M., Davani, A. M., Hoover, J., Omrani, A., Graham, J., & Dehghani, M. (2021). Moral concerns are differentially observable in language. Cognition, 212, 104696. https://nsf.gov

[19] Lind, G. (2023). The theory of moral-cognitive development: A socio-psychological assessment. Moral Development and the Social Environment.

[20] Miozzo, M., Navarrete, E., Ongis, M., Mello, E., Girotto, V., & Peressotti, F. (2020). Foreign language effect in decision-making: How foreign is it? Cognition, 199, 104245.

[21] Pessoa, L. (2022). The entangled brain: How perception, cognition, and emotion are woven together.

[22] Schein, C. (2020). The importance of context in moral judgments. Perspectives on Psychological Science.

[23] Umejima, K., Flynn, S., & Sakai, K. L. (2021). Enhanced activations in syntax-related regions for multilinguals while acquiring a new language. Scientific Reports. https://nature.com

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Privacy and Security in Eco-Medical Data: A Computer Science Approach

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Abstract

Digitization of healthcare has led to widespread use of electronic medical records and other types of ecomedical data, enhancing patient care but posing significant privacy and security concerns. This paper explores the intersection of computer science and ecomedical data privacy and security and more in Let us review in particular the methods of privacy protection and consider their effectiveness and limitations. The paper also examines security measures including access, secure mass computing and blockchain technology. Despite these advances, issues such as computing costs and the need for real-time data processing still pose challenges. Future research directions include optimizing privacy algorithms, integrating artificial intelligence for proactive security, and developing scalable blockchain solutions. This review highlights the critical role of computer science in safeguarding ecomedical data and outlines potential pathways for enhancing privacy and security in the evolving digital healthcare landscape.

Keywords: Ecomedical Data; Privacy; Cybersecurity; Protection; Access

References

[1] Baker, S. (2021). The impact of ransomware attacks on healthcare systems: A case study of Universal Health Services. Journal of Cybersecurity, 7 (1), 1-15. https://doi.org/10.1093/cyber/cyab007

[2] Costan, V., & Devadas, S. (2016). Intel SGX explained. IACR Cryptology ePrint Archive, 2016, 86. https://eprint.iacr.org/2016/086.pdf

[3] Dwork, C., & Roth, A. (2014). The algorithmic foundations of differential privacy. Foundations and Trends in Theoretical Computer Science, 9(3–4), 211-407. https://doi.org/10.1561/0400000042

[4] El Emam, K., Jonker, E., Arbuckle, L., & Malin, B. (2016). Guide to the de-identification of health information. CRC Press.

[5] Gentry, C. (2009). A fully homomorphic encryption scheme. Stanford University. https://crypto.stanford.edu/craig/homomorph.pdf

[6] Harris, S. (2017). Cryptography and network security: Principles and practice (7th ed.). Pearson.

[7] HHS. (2021). Health Insurance Portability and Accountability Act of 1996 (HIPAA). U.S. Department of Health & Human Services. Retrieved from https://www.hhs.gov/hipaa/for-professionals/privacy/index.html

[8] Khan, S., Yoon, M., & Kim, Y. (2020). AI-based anomaly detection for secure healthcare data management. Healthcare Information Research, 26(4), 292-299. https://doi.org/10.4258/hir.2020.26.4.292

[9] KPMG. (2020). Healthcare cyber security: Defending against data breaches. Retrieved from https://home.kpmg/xx/en/home/insights/2020/06/healthcare-cyber-security.html

[10] Menezes, A., van Oorschot, P., & Vanstone, S. (1996). Handbook of applied cryptography. CRC Press.

[11] McMahan, H. B., Moore, E., Ramage, D., & Hsieh, C. J. (2017). Federated learning of deep networks using model averaging. Proceedings of the 20th International Conference on Artificial Intelligence and Statistics (AISTATS). https://arxiv.org/abs/1602.05629

[12] Muthusamy, V., Dharmaraj, M., & Sriram, A. (2020). Multi-factor authentication in healthcare data security: An empirical review. International Journal of Information Management, 50, 335-348. https://doi.org/10.1016/j.ijinfomgt.2019.09.001

[13] Nakamoto, S. (2008). Bitcoin: A peer-to-peer electronic cash system. Retrieved from https://bitcoin.org/bitcoin.pdf

[14] Reddy, S., Fox, J., & Koppel, R. (2022). Data breaches and their impact on patient privacy. Journal of Medical Systems, 46 (3), 1-12. https://doi.org/10.1007/s10916-022-01780-3

[15] Stallings, W., & Brown, L. (2019). Computer security: Principles and practice (4th ed.). Pearson.

[16] Voigt, P., & Von dem Bussche, A. (2017). The EU General Data Protection Regulation (GDPR). Springer.

[17] Yao, A. C. (1982). Protocols for secure computations. Proceedings of the 23rd Annual Symposium on Foundations of Computer Science (FOCS), 160-164. https://doi.org/10.1109/SFCS.1982.38

[18] Zhang, L., Zhang, Y., & Lin, J. (2020). Insider threats in healthcare: A systematic review. Journal of Healthcare Engineering, 2020, 1-12. https://doi.org/10.1155/2020/4567389

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Sustainable Tourism and Public Health: The Role of Eco-Medicine in Protecting Tourists and Local Communities

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Abstract

Sustainable tourism is increasingly recognized as a key element in promoting environmental policy and protecting public health. This paper explores the intersection of sustainable tourism and public health by focusing on the role of biomedicine in protecting tourists and local communities. Bio-medical uses principles form along with medical practices to address the health effects of environmental changes and tourism activities. This study highlights bio-medical reduction through tourist-related risks, such as communicable diseases, environmental degradation and mental health challenges. The paper also includes best practices for implementation of biomedical approaches to tourism management, and emphasizes the importance of intersectoral collaboration and community involvement. Finally, it advocates a holistic approach to tourism that prioritizes health and sustainability, ensuring that tourism benefits are distributed equitably while minimizing negative impacts on the environment and on public health.

Keywords: Tourists; Sustainable tourism; Public health; Environmental impact; Tourism Management

References

[1] Buckley, R. (2018). Sustainable tourism: Research and reality. Annals of Tourism Research, 70, 1-15. https://doi.org/10.1016/j.annals.2018.03.014

[2] Cohen, A. J., Ross, A., & Haines, A. (2019). Environmental health: A global perspective. Oxford University Press.

[3] Elkington, J. (1997). Cannibals with forks: The triple bottom line of 21st century business. Capstone Publishing.

[4] Gössling, S. (2018). Tourism, environment and sustainability. Routledge.

[5] Gössling, S., Scott, D., & Hall, C. M. (2015). Tourism and water: Interactions, impacts and challenges. Channel View Publications.

[6] Gössling, S., Scott, D., & Hall, C. M. (2019). Global environmental change and tourism. Routledge.

[7] Hall, C. M., Scott, D., & Gössling, S. (2019). The Routledge handbook of tourism and the environment. Routledge.

[8] Honey, M. (2020). The ecological impacts of tourism: An overview. Island Press.

[9] Hancock, T., & Molar, M. (2020). Eco-medicine: An environmental approach to health and wellness. Springer.

[10] Katz, S. (2021). The role of eco-medicine in promoting health and sustainability. Environmental Health Perspectives, 129(5), 560-568. https://doi.org/10.1289/EHP7416

[11] Marmot, M., & Wilkinson, R. (2006). Social determinants of health. Oxford University Press.

[12] McLeroy, K. R., Bibeau, D., Steckler, A., & Glanz, K. (1988). An ecological perspective on health promotion programs. Health Education Quarterly, 15(4), 351-377. https://doi.org/10.1177/109019818801500401

[13] Weaver, D., & Lawton, L. J. (2014). Tourism management. Wiley.

[14] Weaver, D., & Lawton, L. (2017). Tourism management. Wiley.

[15] Wolch, J. R., Byrne, J., & Newell, J. P. (2014). Urban green space, public health, and environmental justice: The challenge of making cities sustainable. Landscape and Urban Planning, 125, 234-244. https://doi.org/10.1016/j.landurbplan.2014.01.017

[16] Zinsstag, J., Schelling, E., Waltner-Toews, D., Tanner, M., & Gibbs, E. P. (2011). One Health: The theory and practice of integrated health approaches. CABI.

[17] Haines, A., Ebi, K. L., & Smith, K. R. (2019). Health risks of climate change: An overview of the health impact assessment approach. Environmental Research Letters, 14(12), 123000. https://doi.org/10.1088/1748-9326/ab5b7f

[18] Haines, A., Montgomery, H., & Haines, A. (2020). The role of environmental health in the climate crisis. The Lancet, 396 (10255), 9-11. https://doi.org/10.1016/S0140-6736(20)31620-7

[19] Kumar, A., Rani, A., & Singh, S. (2019). Impact of tourism on air and water quality: A review. Environmental Science and Pollution Research, 26 (33), 33959-33970. https://doi.org/10.1007/s11356-019-05932-1

[20] Landrigan, P. J., Fuller, R., Acosta, N. J. R., & Adeyi, O. (2018). The Lancet Commission on pollution and health. The Lancet, 391 (10119), 462-512. https://doi.org/10.1016/S0140-6736(17)32345-0

[21] Murray, C. J. L., Ikuta, K. S., Sharara, F., & Swetschinski, L. (2017). Global burden of bacterial antimicrobial resistance in 2019: A systematic analysis. The Lancet, 399 (10325), 629-655. https://doi.org/10.1016/S0140-6736(21)02724-0

[22] Paltiel, A. D., & Zheng, A. (2020). Assessment of SARS-CoV-2 screening strategies for safely reopening college campuses. JAMA Network Open, 3 (7), e2014936. https://doi.org/10.1001/jamanetworkopen.2020.14936

[23] Patz, J. A., Vavrus, S. J., & Uejio, C. K. (2014). Climate change and health: A review of the evidence. Journal of Environmental Health, 76 (1), 42-48.

[24] Rabinowitz, P., Conti, L., & Tustin, A. (2019). One Health: A concept whose time has come. The Lancet Planetary Health, 3 (3), e82-e87. https://doi.org/10.1016/S2542-5196(19)30026-4

[25] Spickett, J., Katscherian, D., & McIver, L. (2018). Health impact assessment: A critical review. International Journal of Environmental Research and Public Health, 15 (6), 1176. https://doi.org/10.3390/ijerph15061176

[26] Yoon, Y., Gursoy, D., & Chen, J. S. (2016). Validating a tourism impact scale. Annals of Tourism Research, 57, 100-115. https://doi.org/10.1016/j.annals.2015.11.007

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A Systematic Review of Emerging Machine Learning Techniques in Public Health Monitoring: Trends and Innovations

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Abstract

Machine learning (ML) has rapidly advanced in public health monitoring, driving innovations and improvements in disease prediction, personalized medicine, and real-time monitoring. This review presents ML strategies like interpretability of AI, federated learning, and integration with genomic data among others, while outlining their use and effects on public health. Nevertheless, there are still some challenges before model interpretability, privacy concerns as well as data quality. It focuses on suggesting further research steps that would be aimed at addressing these issues which include improving data integration approaches, models that respect individual privacy rights, and generalized models. To guide the development of more efficient health policy solutions for all people regardless of their social standing or origin of birth, the main aim of this extensive investigation is to underscore future trajectories as well as present patterns concerning the utilization of emerging machine learning techniques in public health by providing insights of current trends.

Keywords: Machine Learning; Public Health Monitoring; Explainable AI; Genomic Data Integration; Privacy-Preserving Techniques

References

[1] Barocas, S., & Selbst, A. D. (2016). Big data's disparate impact. California Law Review, 104 (3), 671-732. https://doi.org/10.2139/ssrn.2477899

[2] Binns, R., Veale, M., Van Kleek, M., Shadbolt, N., & Shadbolt, N. (2018). 'It's redacting, not deleting': The role of explainability in AI ethics. Proceedings of the 2018 CHI Conference on Human Factors in Computing Systems, 1-14. https://doi.org/10.1145/3173574.3173883

[3] Breiman, L. (2001). Random forests. Machine Learning, 45 (1), 5-32. https://doi.org/10.1023/A:1010933404324

[4] Breiman, L., Friedman, J., Olshen, R., & Stone, C. (1986). Classification and regression trees. Chapman & Hall/CRC.

[5] Chen, T., & Guestrin, C. (2016). XGBoost: A scalable tree boosting system. Proceedings of the 22nd ACM SIGKDD International Conference on Knowledge Discovery and Data Mining, 785-794. https://doi.org/10.1145/2939672.2939785

[6] Cohen, I. G., & Mello, M. M. (2018). Big data, big tech, and the future of healthcare. The New England Journal of Medicine, 379 (1), 96-97. https://doi.org/10.1056/NEJMp1805685

[7] Cortes, C., & Vapnik, V. (1995). Support-vector networks. Machine Learning, 20 (3), 273-297. https://doi.org/10.1007/BF00994018

[8] Doshi-Velez, F., & Kim, B. (2017). Towards a rigorous science of interpretable machine learning. Proceedings of the 2017 ICML Workshop on Human Interpretability in Machine Learning. Retrieved from https://arxiv.org/abs/1702.08608

[9] Dwork, C. (2008). Differential privacy: A survey of results. Theory and Applications of Models of Computation, 1-19. https://doi.org/10.1007/978-3-540-85983-1_1

[10] Friedman, J. (2001). Greedy function approximation: A gradient boosting machine. The Annals of Statistics, 29 (5), 1189-1232. https://doi.org/10.1214/aos/1013203451

[11] Henderson, N., Jain, S., & Zhang, Y. (2021). Data quality and machine learning: Understanding and mitigating the impacts. Journal of Biomedical Informatics, 116, 103728. https://doi.org/10.1016/j.jbi.2021.103728

[12] Hochreiter, S., & Schmidhuber, J. (1997). Long short-term memory. Neural Computation, 9 (8), 1735-1780. https://doi.org/10.1162/neco.1997.9.8.1735

[13] Hosmer, D. W., & Lemeshow, S. (2000). Applied logistic regression (2nd ed.). Wiley.

[14] Jiang, J., Xu, D., & Liu, S. (2019). Generalizing machine learning models to new populations: A case study in healthcare. Proceedings of the 2019 Conference on Health Informatics, 103-112. https://doi.org/10.1145/3315648.3331906

[15] Kourou, K., Exarchos, T. P., Karamouzis, M. V., & Papaloukas, C. (2015). Machine learning applications in cancer prognosis and prediction. Computational and Structural Biotechnology Journal, 13, 8-17. https://doi.org/10.1016/j.csbj.2014.11.003

[16] Kwok, H., Lee, C., & Park, J. (2016). Predicting disease outbreaks with social media data: A review. Health Information Science and Systems, 4 (1), 10. https://doi.org/10.1186/s13755-016-0133-8

[17] LeCun, Y., Bengio, Y., & Hinton, G. (2015). Deep learning. Nature, 521 (7553), 436-444. https://doi.org/10.1038/nature14539

[18] Libbrecht, M. W., & Noble, W. S. (2015). Machine learning applications in genetics and genomics. Nature Reviews Genetics, 16 (6), 321-332. https://doi.org/10.1038/nrg3920

[19] Lundberg, S. M., & Lee, S. I. (2017). A unified approach to interpreting model predictions. Proceedings of the 31st International Conference on Neural Information Processing Systems (NeurIPS 2017), 4765-4774. https://doi.org/10.5555/3295222.3295237

[20] McMahan, H. B., Moore, E., Ramage, D., & Hsu, D. (2017). Communication-efficient learning of deep networks from decentralized data. Proceedings of the 20th International Conference on Artificial Intelligence and Statistics (AISTATS 2017), 1273-1282. Retrieved from https://arxiv.org/abs/1602.05629

[21] Patel, M. S., Asch, D. A., & Rosin, R. (2015). Wearable devices as facilitators of healthy behavior change: A systematic review. American Journal of Preventive Medicine, 49 (5), 747-755. https://doi.org/10.1016/j.amepre.2015.04.012

[22] Quinlan, J. R. (1986). Induction of decision trees. Machine Learning, 1 (1), 81-106. https://doi.org/10.1007/BF00116251

[23] Raji, I. D., Buolamwini, J., & Dastin, J. (2020). Mitigating unintended biases in machine learning systems: A case study in public health. Proceedings of the 2020 AAAI/ACM

Conference on Artificial Intelligence, Ethics, and Society, 179-185. https://doi.org/10.1145/3375627.3375820

[24] Ribeiro, M. T., Singh, S., & Guestrin, C. (2016). "Why should I trust you?" Explaining the predictions of any classifier. Proceedings of the 22nd ACM SIGKDD International Conference on Knowledge Discovery and Data Mining, 1135-1144. https://doi.org/10.1145/2939672.2939778

[25] Signorini, A., Segre, A. M., & Polgreen, P. M. (2011). The use of social media tools for predicting influenza epidemics. Clinical Infectious Diseases, 52 (6), 750-751. https://doi.org/10.1093/cid/cir016

[26] Sokolova, M., Lapalme, G., & DeCooman, S. (2006). Predictive modeling for flu outbreak forecasting. Proceedings of the 2006 Conference on Data Mining, 223-228. https://doi.org/10.1109/ICDM.2006.31

[27] Tzeng, J., Lee, T., & Ayer, T. (2020). Navigating data privacy and security in the era of big data and AI. Journal of Medical Systems, 44 (9), 150. https://doi.org/10.1007/s10916-020-01679-0

[28] Zhang, Y., Zhang, M., & Zhang, W. (2020). Data quality challenges in machine learning and their impact on public health applications. Health Informatics Journal, 26 (3), 1221-1232. https://doi.org/10.1177/1460458219899047