

Editorial

Perspectives on Machine Learning

Su-Cheng Haw

Multimedia University, Malaysia

Abstract: Progress in machine learning technology has truly impacted our lives by tailoring many of our daily experiences to be seamless and intuitive. This innovation has brought about changes in day-to-day routines; from suggesting music based on our emotions to offering recommendations for places to visit or meals to try out. This special issue explores various Machine Learning technologies. Among some are Machine Learning advances that improve human interaction, predict user behaviours, analyse user reviews, and optimize high-risk investments like Bitcoin trading. These technologies enhance user experiences, help businesses refine marketing strategies, and provide quick insights from vast amounts of information, elevating AI to new heights. With the rise of transformation into advanced technologies taking prominence in our lives, we expect to see these machine learning innovations being integrated across many sectors and uses.

Keywords: Editorial, Machine Learning.

Designing the Present, Creating the Future with Machine Learning

Machine Learning (ML) is a more specialized area of artificial intelligence (AI), which enables systems to learn from data and enhance their performance over time without being explicitly programmed (Catterwell, 2020; Kufel *et al.*, 2023). On the other hand, AI comprises a broader set of technologies targeted at mimicking human intelligence that includes reasoning, decision-making and problem-solving. The focus of ML lies in pattern recognition, prediction and repetitive tasks that are closer to our day-to-day lives (Ali *et al.*, 2024; Mandalapu *et al.*, 2023; Noriega *et al.*, 2023).

In recent years, the advance of machine-learning technology has greatly enriched human life. It simplifies many things we once thought difficult and makes many day-to-day things smarter

and more efficient. End-user applications such as fraud detection ([Khalid et al., 2024](#); [Prasad et al., 2023](#)), chatbots, and product recommendations are second nature to us today, making it easier for human-to-technology interaction. Be it suggesting a song that matches our mood ([Garanayak et al., 2022](#); [Gatta et al., 2023](#)) or even assisting in deciding where to head for lunch ([Dhiman et al., 2024](#); [Lambay & Pakkir Mohideen, 2022](#)), such seamless personalisation of experience comes through ML. Navigation apps, such as Google Maps, provide us with the best and shortest route and real-time traffic information to avoid delays, so that you may get to your destination faster ([Yatnalkar et al., 2020](#)). In the context of social media, by learning about your interactions with content, social media platforms are able to find more relevant posts to recommend to you. For all these applications, ML technology makes them a little bit easier or more intuitive. These advances, unimaginable just a few years ago, could profoundly improve lives.

In essence, ML is like having a helpful assistant working behind the scenes ([Gopalakrishnan & Kumaran, 2022](#)), continuously learning more about who we are and what we need. It is critical to continue understanding this technology's functions and effects as it develops. ML enables us to benefit from its advantages while making sure that any potential drawbacks, such as biases or privacy issues, are addressed.

In This Issue

Six major areas are covered in this issue, ranging from book recommendations to human interaction to text summarization.

The work by Kumaresan *et al.* ([2024](#)) is significant because it describes the abilities of machines to recognise and interpret human postures. Precise estimation of human poses in computer vision is essential for many uses, including interactive gaming, health monitoring, and even safer self-driving cars. The authors present a novel approach to improve Human Pose Estimation (HPE) in computer vision using dual self-attention (DSA) mechanisms embedded in a high-resolution network (HR Net). The DSA mechanisms, which increase global perception, are embedded into HR Net to form a lightweight and powerful architecture, DSA-HR Net. The model is evaluated on a context validation dataset. The improvements in accuracy demonstrate that this model is not only faster but also more accurate than alternative approaches. This could result in pose identification that is more accurate in real-world applications, improving the intelligence and responsiveness of technology to human movements.

The significance of the study by Raja Sekaran *et al.* ([2024](#)) lies in its ability to improve smartphone comprehension and interpretation of human behaviours by utilising data from several sensors. Using information from sensors such as accelerometers and gyroscopes,

Human Activity Recognition (HAR) aims to allow devices to identify a person's activity accurately, be it walking, running, or even just standing motionless. In order to extract the features of every sensor independently, the authors proposed a lightweight deep temporal learning model called Feature-Level Fusion Multi-Sensor Aggregation Temporal Network (FLF-MSATN). FLF-MSATN can achieve better recognition performance by concatenating more extended temporal information. This method is very important because it allows our everyday gadgets to identify tasks precisely as well as reliably. Maybe your smartphone will become an even better fitness tracker, helping you to keep healthy in more comprehensive ways and reducing risks of falls by the elderly or those in care.

Chongwarin *et al.* (2024) have proposed a new approach to finding user preference trends by analysing a million user reviews to examine the effects of several methods (such as k-Nearest Neighbours and Matrix Factorisation). Their collaborative filtering approach suggests books based on mutual interests. They highlight that it is crucial to match the right algorithm to the features of the dataset, because this interaction has a big impact on how effective the recommendation system can be. In the end, their study aids in the creation of more accurate and customised book recommendations, improving the search experience by assisting users in finding books that immediately and easily correspond with their interests.

The study by Lau & Tan (2024) is crucial because it enhances the automated summary of long documents, and therefore it allows us to quickly read through vast amounts of text. The proposed approach uses an extractive method to complement the abstractive approach of long-form text summarisation generation rephrasing, by finding and selecting important sentences to construct a summary which is more humanly readable. In this way, it ensures that the summary does not lose factual information from the original sources. This method addresses the issues associated with solely relying on human evaluations, and promises a text summarization solution that is more accurate and efficient.

The study by Wong *et al.* (2024) is significant because it supports businesses in developing more accurate marketing strategies, by assisting them to understand and better target their customers. Using Hierarchical Clustering with Recency, Frequency, and Monetary (RFM) Analysis, the authors can segment customer data more accurately as compared to other conventional ways, such as K-Means Clustering. Thus, businesses can more accurately direct their marketing campaigns and ensure the highest accuracy of delivering the right message to the right customer. This can help businesses to achieve higher customer satisfaction, greater customer loyalty and eventually higher revenue.

The new technique proposed by Tay & Lim (2024) could enhance high-risk bitcoin trading investment based on Deep Reinforcement Learning (DRL) algorithms to predict the future

prices of well-known cryptocurrencies, such as DogeCoin, Ethereum, and Bitcoin. This methodology gives hope to investors that they will somehow find a way to increase their wealth even as inflation steadily depletes savings.

Conclusion

This special issue delves into the topic of “Perspectives on Machine Learning”, examining diverse perspectives that showcase how ML is reshaping different sectors and driving technological progress that positively and significantly can impact on many areas of life. The perspectives highlighted in this special issue lay the groundwork for understanding ML. We hope they will provide our readers with a deeper insight into the latest developments, insights and the prospective path of this revolutionary domain. It is our hope that this issue will inform and inspire, equipping many readers with the knowledge to navigate and contribute to the evolving landscape of ML.

While ML offers many benefits, such as efficiency, personalisation, and insights, it is essential to balance its advantages with potential limitations. For instance, ML may not be useful in areas that requires human empathy and ethical decision-making. Privacy is another area where misuse or unintended use of personal data can have serious risks. Over-reliance on machine learning in these areas could create dehumanisation and ethical challenges.

References

- Ali, Y., Hussain, F., & Haque, M. M. (2024). Advances, challenges, and future research needs in machine learning-based crash prediction models: A systematic review. *Accident Analysis and Prevention*, 194, 107378. <https://doi.org/10.1016/j.aap.2023.107378>
- Catterwell, R. (2020). Automation in contract interpretation*. *Law, Innovation and Technology*, 12(1), 81–112. <https://doi.org/10.1080/17579961.2020.1727068>
- Chongwarin, J., Manorom, P., Chaichuay, V., Boongoen, T., Li, C., & Chansanam, W. (2024). Enhancing Book Recommendation Accuracy through User Rating Analysis and Collaborative Filtering Techniques. *Journal of Telecommunications and the Digital Economy*, 12(3), 51–72. <https://doi.org/10.18080/v12n3.976>
- Dhiman, G., Gupta, G., & Sidhu, B. K. (2024). A Review and Research Panorama on Food Recommender System Based on Health Care. *International Journal of Intelligent Systems and Applications in Engineering*, 12(17s), 409–422. Retrieved from <https://ijisae.org/index.php/IJISAE/article/view/4890>
- Garanayak, M., Nayak, S. K., Sangeetha, K., Choudhury, T., & Shitharth, S. (2022). Content and Popularity-Based Music Recommendation System. *International Journal of Information System Modeling and Design*, 13(7), 1–14. <https://doi.org/10.4018/ijismd.315027>
- Gatta, V. La, Moscato, V., Pennone, M., Postiglione, M., & Sperli, G. (2023). Music Recommendation via Hypergraph Embedding. *IEEE Transactions on Neural*

- Networks and Learning Systems*, 34(10), 7887–7899. <https://doi.org/10.1109/TNNLS.2022.3146968>
- Gopalakrishnan, S., & Kumaran, M. S. (2022). IIOT framework based ML model to improve automobile industry product. *Intelligent Automation and Soft Computing*, 31(3), 1435–1449. <https://doi.org/10.32604/IASC.2022.020660>
- Khalid, A. R., Owoh, N., Uthmani, O., Ashawa, M., Osamor, J., & Adejoh, J. (2024). Enhancing Credit Card Fraud Detection: An Ensemble Machine Learning Approach. *Big Data and Cognitive Computing*, 8(1), 6. <https://doi.org/10.3390/bdcc8010006>
- Kufel, J., Bargiel-Łączek, K., Kocot, S., Koźlik, M., Bartnikowska, W., Janik, M., Czogalik, Ł., Dudek, P., Magiera, M., Lis, A., Paszkiewicz, I., Nawrat, Z., Cebula, M., & Gruszczyńska, K. (2023). What Is Machine Learning, Artificial Neural Networks and Deep Learning?—Examples of Practical Applications in Medicine. *Diagnostics*, 13(15), 2582. <https://doi.org/10.3390/diagnostics13152582>
- Kumaresan, S. P., Yee, L. F., Palanichamy, N., Annan, E. (2024). Improving Human Pose Estimation with Integrated Dual Self-Attention Mechanism in High-Resolution Network. *Journal of Telecommunications and the Digital Economy*, 12(3), 7–28. <https://doi.org/10.18080/v12n3.984>
- Lambay, M. A., & Pakkir Mohideen, S. (2022). A Hybrid Approach Based Diet Recommendation System Using ML and Big Data Analytics. *Journal of Mobile Multimedia*, 18(6), 1541–1560. <https://doi.org/10.13052/jmm1550-4646.1864>
- Lau, A. J. J., & Tan, C. W. (2024). LongT5Rank: A Novel Integrated Hybrid Approach for Text Summarisation. *Journal of Telecommunications and the Digital Economy*, 12(3), 73–96. <https://doi.org/10.18080/v12n3.977>
- Mandalapu, V., Elluri, L., Vyas, P., & Roy, N. (2023). Crime Prediction Using Machine Learning and Deep Learning: A Systematic Review and Future Directions. *IEEE Access*, 11, 60153–60170. <https://doi.org/10.1109/ACCESS.2023.3286344>
- Noriega, J. P., Rivera, L. A., & Herrera, J. A. (2023). Machine Learning for Credit Risk Prediction: A Systematic Literature Review. *Data*, 8(11). <https://doi.org/10.3390/data8110169>
- Prasad, P. Y., Chowdarv, A. S., Bavitha, C., Mounisha, E., & Reethika, C. (2023). A Comparison Study of Fraud Detection in Usage of Credit Cards using Machine Learning. *7th International Conference on Trends in Electronics and Informatics, ICOEI 2023—Proceedings*. <https://doi.org/10.1109/ICOEI56765.2023.10125838>
- Raja Sekaran, S., Han, P. Y., You, L. Z., & Yin, S. H. (2024). Feature-Level Fusion Multi-Sensor Aggregation Temporal Network for Smartphone-Based Human Activity Recognition. *Journal of Telecommunications and the Digital Economy*, 12(3), 29–50. <https://doi.org/10.18080/v12n3.979>
- Tay, X. H., & Lim, S. M. (2024). Deep Reinforcement Learning in Cryptocurrency Trading: A Profitable Approach. *Journal of Telecommunications and the Digital Economy*, 12(3), 126–147. <https://doi.org/10.18080/v12n3.985>
- Wong, C. G., Tong, G. K., & Haw, S. C. (2024). Exploring Customer Segmentation in E-Commerce using RFM Analysis with Clustering Techniques. *Journal of*

Telecommunications and the Digital Economy, 12(3), 97–125.
<https://doi.org/10.18080/v12n3.978>

Yatnalkar, G., Narman, H. S., & Malik, H. (2020). An Enhanced Ride Sharing Model Based on Human Characteristics and Machine Learning Recommender System. *Procedia Computer Science*, 170, 626–633. <https://doi.org/10.1016/j.procs.2020.03.135>