[3] M. O. Topal, A. Bas, and I. van Heerden, ‘‘Exploring transform-

ers in natural language generation: GPT, BERT, and XLNet,’’ 2021,

arXiv:2102.08036.

[5] O. S. Shalom, H. Roitman, and P. Kouki, ‘‘Natural language processing

for recommender systems,’’ in Recommender Systems Handbook, F. Ricci,

L. Rokach, and B. Shapira, Eds. New York, NY, USA: Springer, 2021,

pp. 447–483.

[8] F. Sun, J. Liu, J. Wu, C. Pei, X. Lin, W. Ou, and P. Jiang, ‘‘BERT4Rec:

Sequential recommendation with bidirectional encoder representations

from transformer,’’ in Proc. 28th ACM Int. Conf. Inform. Knowl. Manage.,

Nov. 2019, pp. 1441–1450.

[14] A. Vaswani, N. Shazeer, N. Parmar, J. Uszkoreit, L. Jones, A. N. Gomez,

and I. Polosukhin, ‘‘Attention is all you need,’’ in Proc. Adv. Neural Inform.

Process. Syst., vol. 30, 2017, pp. 1–11.

[15] H. Wang, J. Li, H. Wu, E. Hovy, and Y. Sun, ‘‘Pre-trained language models

and their applications,’’ Engineering, vol. 25, pp. 51–65, Jun. 2022.

[16] F. Zhang, G. An, and Q. Ruan, ‘‘Transformer-based natural language

understanding and generation,’’ in Proc. 16th IEEE Int. Conf. Signal

Process. (ICSP), vol. 1, Oct. 2022, pp. 281–284.

[17] B. Wang, Q. Huang, B. Deb, A. Halfaker, L. Shao, D. McDuff, and

J. Gao, ‘‘Logical transformers: Infusing logical structures into pre-trained

language models,’’ in Proc. Findings Assoc. Comput. Linguist. (ACL),

Jul. 2023, pp. 1762–1773.

[18] J. Devlin, M.-W. Chang, K. Lee, and K. Toutanova, ‘‘BERT: Pre-training

of deep bidirectional transformers for language understanding,’’ 2018,

arXiv:1810.04805.

[19] G. Yenduri, G. Srivastava, P. K. R. Maddikunta, R. H. Jhaveri, W. Wang,

A. V. Vasilakos, and T. R. Gadekallu, ‘‘Generative pre-trained transformer:

A comprehensive review on enabling technologies, potential applications,

emerging challenges, and future directions,’’ 2023, arXiv:2305.10435.

[20] X. Yu, F. Jiang, J. Du, and D. Gong, ‘‘A cross-domain collaborative

filtering algorithm with expanding user and item features via the latent

factor space of auxiliary domains,’’ Pattern Recognit., vol. 94, pp. 96–109,

Oct. 2019.

[21] X. Yu, Q. Peng, L. Xu, F. Jiang, J. Du, and D. Gong, ‘‘A selective ensemble

learning based two-sided cross-domain collaborative filtering algorithm,’’

Inf. Process. Manage., vol. 58, no. 6, Nov. 2021, Art. no. 102691.

[22] F. Huang, Z. Wang, X. Huang, Y. Qian, Z. Li, and H. Chen, ‘‘Aligning

distillation for cold-start item recommendation,’’ in Proc. 46th Int. ACM

SIGIR Conf. Res. Develop. Inf. Retr., 2023, pp. 1147–1157.

[23] Y. Lu, K. Nakamura, and R. Ichise, ‘‘HyperRS: hypernetwork-based rec-

ommender system for the user cold-start problem,’’ IEEE Access, vol. 11,

pp. 5453–5463, 2023.

[24] C. Channarong, C. Paosirikul, S. Maneeroj, and A. Takasu, ‘‘Hybrid-

BERT4Rec: A hybrid (content-based filtering and collaborative filter-

ing) recommender system based on BERT,’’ IEEE Access, vol. 10,

pp. 56193–56206, 2022.

[25] X. Liu, G. Zhou, M. Kong, Z. Yin, X. Li, L. Yin, and W. Zheng, ‘‘Devel-

oping multi-labelled corpus of Twitter short texts: A semi-automatic

method,’’ Systems, vol. 11, no. 8, p. 390, Aug. 2023.

[26] X. Liu, S. Wang, S. Lu, Z. Yin, X. Li, L. Yin, J. Tian, and W. Zheng,

‘‘Adapting feature selection algorithms for the classification of Chinese

texts,’’ Systems, vol. 11, no. 9, p. 483, Sep. 2023.

[27] K. J. Lee, Y. Hwangbo, H. Jung, B. Jeong, and J. I. Park, ‘‘TransformRec:

User-centric recommender system for e-commerce using transformer,’’ in

Proc. 23rd Int. Center Electron. Commerce, 2022, pp. 171–178.

[28] D. Sangiorgi and Y. Eun, ‘‘Service design as an approach to new service

development: Reflections and future studies,’’ in Proc. ServDes. Service

Future, Proc. 4th Service Design Service Innov. Conf., Linköping Electron.

Conf., 2014, pp. 194–204.

[29] J. Wang, H. Guo, and J. Chen, ‘‘Research on extension innovation model

in the creation process of service design,’’ Proc. Comput. Sci., vol. 199,

pp. 992–999, 2022.

[30] S. Pais, J. Cordeiro, and M. L. Jamil, ‘‘NLP-based platform as a ser-

vice: A brief review,’’ J. Big Data, vol. 9, no. 54, pp. 1–26, 2022, doi:

10.1186/s40537-022-00603-5.

[31] A. Copestake, Natural Language Processing: Part 1 of Lecture Notes (Ann

Copestake Lecture Note Series), Cambridge, U.K., 2003.

[32] D. M. Zajic, B. J. Dorr, and J. Lin, ‘‘Single-document and multi-document

summarization techniques for email threads using sentence compression,’’

Inf. Process. Manage., vol. 44, no. 4, pp. 1600–1610, Jul. 2008.

[33] M. A. Fattah and F. Ren, ‘‘GA, MR, FFNN, PNN and GMM based models

for automatic text summarization,’’ Comput. Speech Lang., vol. 23, no. 1,

pp. 126–144, Jan. 2009.

[34] L. Fan, L. Li, Z. Ma, S. Lee, H. Yu, and L. Hemphill, ‘‘A bibliometric

review of large language models research from 2017 to 2023,’’ 2023,

arXiv:2304.02020.

[35] M. Liao and S. S. Sundar, ‘‘When e-commerce personalization systems

show and tell: Investigating the relative persuasive appeal of content-based

versus collaborative filtering,’’ J. Advertising, vol. 51, no. 2, pp. 256–267,

Mar. 2022.

[36] K. J. Lee, B. Jeong, Y. Hwangbo, S. Kim, and M. Yang, ‘‘Target marketing

methodology as a dual of user-centric hyper-personalized recommendation

systems for multi-merchant environments,’’ in Proc. Korea Soc. Manag.

Inf. Syst. Joint Spring Conf., Busan, South Korea, Jun. 2022.

[37] Q. Deng, K. Wang, M. Zhao, Z. Zou, R. Wu, J. Tao, and L. Chen,

‘‘Personalized bundle recommendation in online games,’’ in Proc. 29th

ACM Int. Conf. Inf. Knowl. Manage., Oct. 2020, pp. 2381–2388.

[38] M. Beladev, L. Rokach, and B. Shapira, ‘‘Recommender systems for

product bundling,’’ Knowl.-Based Syst., vol. 111, pp. 193–206, Nov. 2016.

[39] S. Kim, B. Jeong, G. Lee, Y. Cho, and K. J. Lee, ‘‘Product bundling and

co-marketing methodology through big data analysis of recommendation

system results,’’in Proc. Korea Intell. Inf. Syst. Soc. Fall Conf., Seoul, South

Korea, Nov. 2022.