

Top 3 Popular Recommendation System models				
model name	brief description	reference	evaluation	note
Neural Collaborative Filtering(NCF)	Neural Collaborative Filtering (NCF) is a deep learning-based approach that enhances recommendation systems by utilizing neural networks to model user-item interactions. Unlike traditional collaborative filtering methods, which rely on matrix factorization (MF) and use inner products to capture relationships, NCF replaces this operation with a neural network. This approach enables the model to learn more complex, non-linear patterns in user preferences, ultimately improving recommendation accuracy.	<p>Ferrari Dacrema, M., Cremonesi, P. and Jannach, D. (2019) “Are we really making much progress? A worrying analysis of recent neural recommendation approaches: A worrying analysis of recent neural recommendation approaches,” in Proceedings of the 13th ACM Conference on Recommender Systems. New York, NY, USA: ACM.</p> <p>He, X. et al. (2017) “Neural Collaborative Filtering,” in Proceedings of the 26th International Conference on World Wide Web. Republic and Canton of Geneva, Switzerland: International World Wide Web Conferences Steering Committee.</p> <p>Liang, D. et al. (2018) “Variational Autoencoders for Collaborative Filtering,” arXiv [stat.ML]. Available at: http://arxiv.org/abs/1802.05814.</p> <p>Ong, K., Haw, S.-C. and Ng, K.-W. (2019) “Deep learning based-recommendation system: An overview on models, datasets, evaluation metrics, and future trends,” in Proceedings of the 2019 2nd International Conference on Computational Intelligence and Intelligent Systems. New York, NY, USA: ACM.</p> <p>Rendle, S. et al. (2020) “Neural collaborative filtering vs. Matrix factorization revisited,” in Fourteenth ACM Conference on Recommender Systems. New York, NY, USA: ACM.</p> <p>Wang, X. et al. (2019) “Neural graph collaborative filtering,” in Proceedings of the 42nd International ACM SIGIR Conference on Research and Development in Information Retrieval. New York, NY, USA: ACM.</p>	Hit Ratio(HR), Normalized Discounted Cumulative Gain (NDCG), Recall	cited 7800+ times on google scholar
Light Graph Convolution Network(LightGCN)	<p>LightGCN (Light Graph Convolutional Network) is a lightweight graph neural network model for recommendation systems. It is a simplified version of GNN (Graph Neural Network) in recommendation systems, inheriting the neighbor information aggregation idea of GCN (Graph Convolutional Network) and optimizing NGCF (Neural Graph Collaborative Filtering).</p> <p>Compared with traditional GCN and NGCF, LightGCN can achieve better performance in recommendation tasks while maintaining efficient computing (He et al. 2020).</p>	<p>He, X, Deng, K, Wang, X, Li, Y, Zhang, Y & Wang, M 2020, ‘LightGCN: Simplifying and Powering Graph Convolution Network for Recommendation’, arXiv (Cornell University), Cornell University.</p> <p>Wang, X, He, X, Wang, M, Feng, F & Chua, T-S 2019, ‘Neural Graph Collaborative Filtering’, Proceedings of the 42nd International ACM SIGIR Conference on Research and Development in Information Retrieval.</p> <p>Wu, S, Sun, F, Zhang, W, Xie, X & Cui, B 2022, ‘Graph Neural Networks in Recommender Systems: A Survey’, ACM Computing Surveys.</p> <p>Yu, J, Yin, H, Xia, X, Chen, T, Cui, L & Hung 2021, ‘Are Graph Augmentations Necessary? Simple Graph Contrastive Learning for Recommendation’, arXiv (Cornell University), Cornell University.</p>	Recall; NDCG (Normalized Discounted Cumulative Gain)	cited 4000+ times on google scholar
Deep Neural Networks for YouTube(YouTubeDNN)	DNN (Deep Neural Network) for YouTube, the system consists of two neural networks, one for candidate generation and one for sequencing. Quadric Polynomial Regression (QPR) is combined to avoid inaccurate results due to pretreatment of missing values. The accuracy of the model can be improved by input rich feature sets and normalization of these features to distinguish candidates with high recall rates.	<p>Covington, P., Adams, J. and Sargin, E. (2016). Deep Neural Networks for YouTube Recommendations. Proceedings of the 10th ACM Conference on Recommender Systems - RecSys '16, [online] pp.191–198. doi:https://doi.org/10.1145/2959100.2959190.</p> <p>Shashi Shekhar, Singh, A. and Avadhesh Kumar Gupta (2022). A Deep Neural Network (DNN) Approach for Recommendation Systems. Lecture notes in networks and systems, pp.385–396. doi:https://doi.org/10.1007/978-981-16-9756-2_37.</p> <p>Zhang, L., Luo, T., Zhang, F. and Wu, Y. (2018). A Recommendation Model Based on Deep Neural Network. IEEE Access, 6, pp.9454–9463. doi:https://doi.org/10.1109/access.2018.2789866.</p>	MAE, RMSE, Recall, Precision, F1-measure	cited 4000+ times on google scholar