TEMPORAL GRAPHS FOR MUSIC RECOMMENDATION SYSTEMS

DATASET

- tgbn-genre [4]. Paraphrasing [3] (https://tgb.complexdatalab.com/docs/nodeprop/#tgbn-genre): a bipartite and weighted interaction network between users and music genres, representing users and music genres as nodes, where an interaction denotes a user listening to a music genre at a given time. Edge weights indicate the percentage of a song belonging to a specific genre. The dataset is derived by linking songs from the LastFM-song-listens dataset with music genres from the million-song dataset.

INDUSTRY VALUE

- **Improved recommendation systems:** We aim to enhance recommendation systems for streaming services like Spotify, Netflix, and YouTube. By predicting which set of music/movie/content genres a user will interact with the most, we can personalize recommendations, improve user experience, and increase user engagement and retention.

KEY STAKEHOLDERS

- Spotify, Netflix, YouTube, and similar streaming services.
- End users (listeners and viewers).

KEY PERFORMANCE INDICATORS

- **NDCG@10:** Model performance will be evaluated using mean normalized discounted cumulative gain of the top 10 items (see [1]).
- **Leaderboard:** Does the model perform well enough to earn a place on the relevant TGB leaderboard (see [3]).
- **User engagement:** [Hypothetical.] User engagement metrics such as time spent on platform, number of interactions, feedback, etc.
- **Retention rate:** [Hypothetical.] Impact of personalized recommendations on user retention and satisfaction.
- **Business impact:** [Hypothetical.] Increased subscriptions, ad revenue, customer loyalty, etc.

PROPOSAL OVERVIEW

- **Objective:** Develop a machine learning model to predict user interactions with music genres over the next week.
- **Approach:** Use advanced graph-based algorithms to model user behavior patterns and preferences.
- **Expected outcome:** A scalable and well-performing prediction system that enhances existing recommendation algorithms and drives business growth for streaming platforms.

CONCLUSION

Enhancing recommendation systems through predictive analytics can revolutionize the user experience in the streaming industry. By leveraging the tgbn-genre dataset [4], we aim to create actionable insights and strategic recommendations that empower businesses to deliver personalized content and stay ahead in a competitive market.

REFERENCES

[1] Huang, S., et al. "Temporal graph benchmark for machine learning on temporal graphs." *Advances in Neural Information Processing Systems*, 2023. Preprint: arXiv:2307.01026, 2023.

[2] Huang, S., et al. "TGB." GitHub Repository. https://github.com/shenyangHuang/TGB, 2023. Accessed May 14, 2024.

[3] Huang, S., et al. "Temporal Graph Benchmark." https://tgb.complexdatalab.com/, 2023. Accessed May 14, 2024.

[4] Huang, S., et al. "tgbn-genre dataset." https://github.com/shenyangHuang/TGB/blob/main/tgb/datasets/dataset_scripts/tgbn-genre.py, 2023. Accessed May 14, 2024.