CS 410 Technology Review

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Date: 11/04/2022

Topic: The overview of Google’s Multitask Ranking System

Recommendation systems are playing an important role in many applications from recommending videos in YouTube and Netflix, and to recommend hashtags in LinkedIn and Instagram. We want to recommend a product or video content to a user, and we want to see whether they like it or not. Youtube.com is the world’s largest video sharing platform. at YouTube, sometimes they need recommend multiple objectives and it is not just that easy to combine all those objective together. Designing and developing a real-world large-scale video recommendation system is full of challenges. Firstly, there are often different and sometimes conflicting objectives which we want to optimize for. For example, we may want to recommend videos that users rate highly and share with their friends, in addition to watching [1]. Secondly, there is often implicit bias in the system. For example, a user might have clicked and watched a video simply because it was being ranked high, not because it was the one that the user liked the most. Therefore, models trained using data generated from the current system will be biased, causing a feedback loop effect. How to effectively and efficiently learn to reduce such biases is an open question [2]. Google YouTube team found a way to overcome these challenges such as Multi-date Mixture-of-Experts, it can quickly optimize for multiple ranking objectives, and improved the recommendation quality.

Researchers at Google presented a solution for this multi-task ranking system. YouTube has billions of videos and content. If we want to rank all those billions of videos and show it to the user that is not going to be very efficient and that takes a lot of time. What Engineers at Google did was to from the billions of videos corpus, they select come up with like 500 videos, then they use a very sophisticated model to only check those 500 candidates.