Intro:

When you watch videos on Netflix, Youtube, or Hulu, there always seems to be a pop-up window after you finish watching a video that recommends a few new videos you may be interested in. However, how to get those new videos recommendation is a really complicated process. Google scientists have developed a new architecture trying to resolve and optimize this kind of recommendation, which is called Multitask Ranking System.

Body:

Multitask Ranking System is trying to solve the problem how to remove more biases and incorporate more goals.

The biases typically are the operations users did while they are choosing the videos they want to watch but those operations won't lead to watch behavior. For example, you might click one video just because that video is on the homepage. It shouldn't be considered valuable data when recommending new videos.

Also, this architecture tries to recommend videos that not only may interest users but also may be shared and even liked by the users.

In the modern recommendation system, there are two stages: the candidates generation stage and the ranking stage.

In the candidate generation stage, the system will generate hundreds of video candidates for the ranking stage to use. In the ranking stage, the system will rank the candidates and push the top results to the user.

To achieve those two difficult goals, the architecture uses mixture-of-experts layer and Gating Networks.

To make it much easier to understand, we can separate the process into two sub-stages. The first stage is memorizing the user's operation history and removing unnecessary bias. The second stage is to generate different recommendations according to the different variable settings. And obviously, how we set variables according to how we set our goals.

Conclusion:

This architecture has been proven with high performance. At the same time, it's also progressing in the efforts to make computers think like humans. It's a long and difficult way but we should try our best to train and improve our system.

References

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