Pairwise Approach

(W. Chen, T.-Y. Liu, et al. 2009)

- Unified loss vs. (1-NDCG) Discount coefficients in DCG
  - When $\beta_t = \frac{G(t)\eta(t)}{Z_m}$, $\tilde{L}(f)$ is a tight bound of (1-NDCG).
- Surrogate function of Unified loss
  - After introducing weights β_t, loss functions in Ranking SVM, RankBoost, RankNet are *Cost-sensitive Pairwise Comparison* surrogate functions, and thus are *consistent* with and are *upper bounds* of the unified loss.
  - Consequently, they also upper bound (1-NDCG).