

CSCI3100 Avlanche Rating System Documentations*

Group B2

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*Work in progress, subject to change.

Abstract

A rating system proposed for the player-to-player+word, word-to-player dynamic rating system, inspired from codeforces' elo system.

1 Motivation

Fillin later...

2 Formulation

For player i of rating R_i dueling against j of rating R_j , with words of each of their own being w_i and w_j , we have the following:

To begin with, player's initial rating is set as 1500, each words's rating lognormal distributed at $Lognormal \sim (\log(1500), 0.25^2)$.

We define the winrate of i winning against j as:

$$E(P_{i,j}) = \frac{1}{1 + 10^{(R_j - R_i)/400}} \quad (1)$$

Then, the new Rating of i is:

$$R'_i = R_i + \epsilon(I_{result} - \sqrt{E_{i,j}E_{i,w_i}}) \quad (2)$$

where ϵ equals to 0.05.

Update function of word w_i is similar,

$$E(P_{i,w}) = \frac{1}{1 + 10^{(R_w - R_i)/400}} \quad (3)$$

$$R'_i = R_i + \epsilon(I_{result} - E_{w_i,i}) \quad (4)$$