## Intra-Season Rankings

Rankings within a season is split into two parts. The first part is an initial ranking system that uses the cumulative margin of victory ($M_v$) for a team and their strength of schedule (SoS) for that season. The second part is to scale the results of each game based on location of the game, results, and initial rank of the opponent. This creates a score that rates how positive or negative that game's result has on the team's season.

$O =$ Average Opponent's Win Percentage
$O_2 =$ Average of Opponent's Win Percentage for each Opponent
$M_v =$ Average Margin of Victory

(1) $$\textit{Initial Ranking Score} = M_v \frac{2O + O_2}{3}$$

$$\mathbf{T} = \{\, t \mid t \in \text{FBS} \,\} \;:\; \text{Set of All FBS Teams}$$
$$\mathbf{G} = \{\, g_t \mid t \in \mathbf{T} \,\} \;:\; \text{the number of games for each FBS team}$$
$$\mathbf{M} = \{\, [m_{t,1}, m_{t,2}, \dots, m_{t,g_t}] \mid t \in \mathbf{T} \,\}$$
$$: \text{ Margin of victory for each game for team } t$$
$$\mathbf{R} = \{\, [r_{t,0}, r_{t,1}, \dots, r_{t,g_t}] \mid t \in \mathbf{T},\ r_{t,0} = \text{Ranking for team } t \,\}$$
$$: \text{ the rankings for every FBS team and their opponents}$$

(2) $g(t \in \mathbf{T},\ 1 \le i \le g_t)$ : Opponent difficulty scaling function

$$g(t,\, i) = \left(\frac{m_{t,i}}{|m_{t,i}|}\right)\left(\frac{r_{t,0} - r_{t,i}}{|\mathbf{T}|}\right)$$

(3) $$\Gamma(t \in \mathbf{T}) = \sum_{i=1}^{g_t} m_{t,i} \cdot 3\left(\frac{m_{t,i}}{|m_{t,i}|} \cdot \frac{r_{t,0} - r_{t,i}}{n}\right)$$