Assignment 2
Duckworth Lewis Method

Vedpal Jangir (MTech-AI)
SR no.- 19299

August 22, 2022

0.1 Data preprocessing:

From provided dataset, we need only three columns 'Total runs', 'Wickets in hand', and 'remaining overs'. The Runs column is not accurate so we use 'Total.Run' column by subtracting the total run at each over from the total run scored by the team. The remaining overs are calculated as 50 - 'Over' and wickets in hand are used as the same.

0.2 Model and curve fitting:

The objective function 'z_optimize' calculates the Z(runs) for given Z0(w), L corresponding 'remaining overs' with 'wickets in hand'. The SciPy's 'curve_fit' method is used to optimize the 'z_optimize' to generates the optimal parameters.
In 'DL_method' function we calculate the optimal parameter by curve_fit function for every wicket.
model (run production function) given by..

$$Z = Z0(w)[1 - exp(-L * u/Z0(w)] \tag{1}$$

0.3 Reuslt:

Here are the optimal parameter...

W	Z0	L	MSE
1	11.9594	11.9594	110.6053
2	28.2890	11.9594	191.5877
3	50.7028	11.9594	313.7041
4	79.7008	11.9594	450.2055
5	105.9422	11.9594	605.5286
6	136.0224	11.9594	763.9803
7	169.6483	11.9594	931.8584
8	206.9245	11.9594	1146.8895
9	235.0079	11.9594	1378.6973
10	292.2562	11.9594	1594.5457

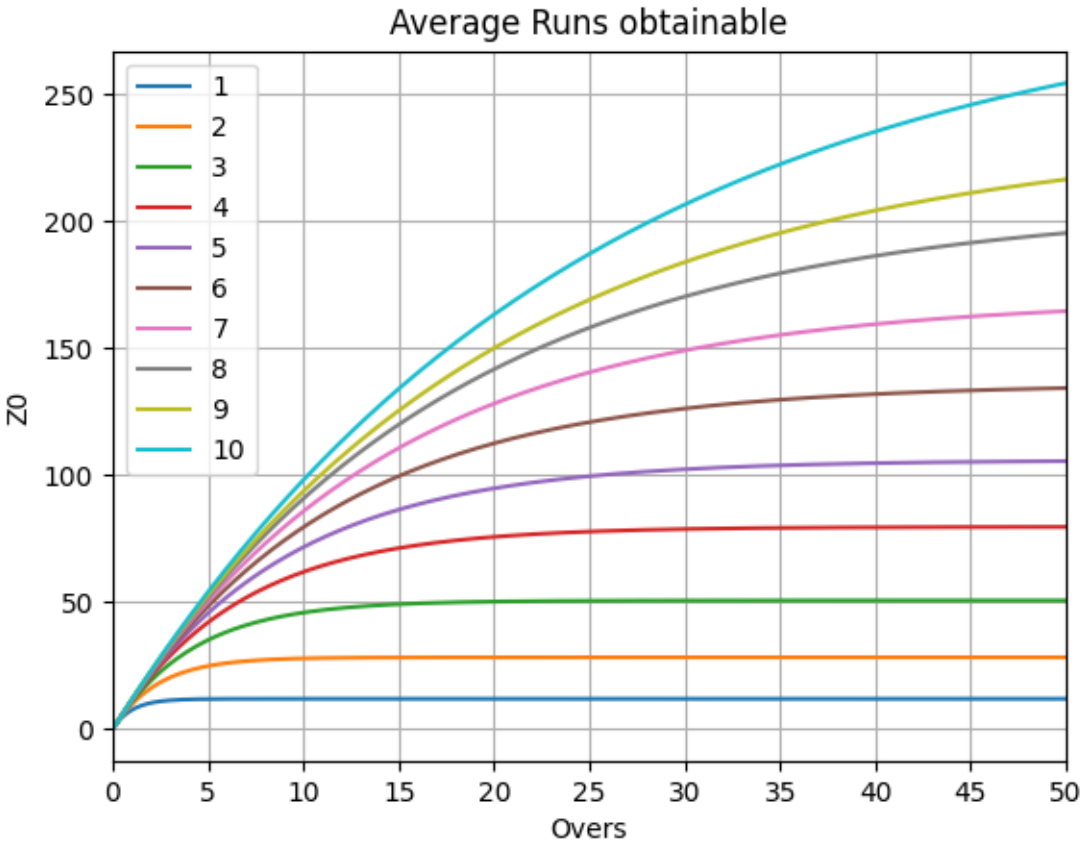

Figure 1: Output figure