Movement planner Algorithm for optimal railway scheduling on Multi-Track Territories

CORRECTION

Team : Xyon

Pushkar Godbole

4th year UG Aerospace Engineer

Department of Aerospace Engineering

Indian Institute of Technology – Bombay

The correction made is to the MOW constraint. The previous MOW constraint was only imposed on the entry node of the MOW for every train path containing that MOW. This leads to incorrect solutions as the constraint has to actually be imposed on both the entry as well as the exit node of the MOW zone.

The corrected mow constraint is imposed as follows :

For a train p facing MOW_i on arcs q to r of its path, the MOW constraint will be -

$$mow\_x_i \times M + t_{pq} \geq mow\_endtime_i \qquad (3a)$$

$$-(1 - mow\_x_i) \times M + t_{p(r+1)} \leq mow\_starttime_i \qquad (3b)$$

$$mow\_x_i \in \{0,1\}$$

M is a very large number here taken as 100000

Note that t_{pq} is the entry time of train p in the arc q of its path and $t_{p(q+1)}$ is the entry time of train p in the arc $(q+1)$ of its path, which is same as the exit time of the train from arc q.

In case of an MOW on a single arc, r will be replaced by q in the constraint (3b).