

# A SMART WAY to AVOID TRAIN DELAYS

*Learn efficient train routing strategies for failing trains*

CHALLENGES: Smart, green and integrated transport

PRODUCTIVE SECTOR: Transportation, railways

## PROBLEM DESCRIPTION

Accenture is a software provider for SFR and DB and is under constant pressure to provide better scheduling algorithms to deal with failing trains and to minimize delays.

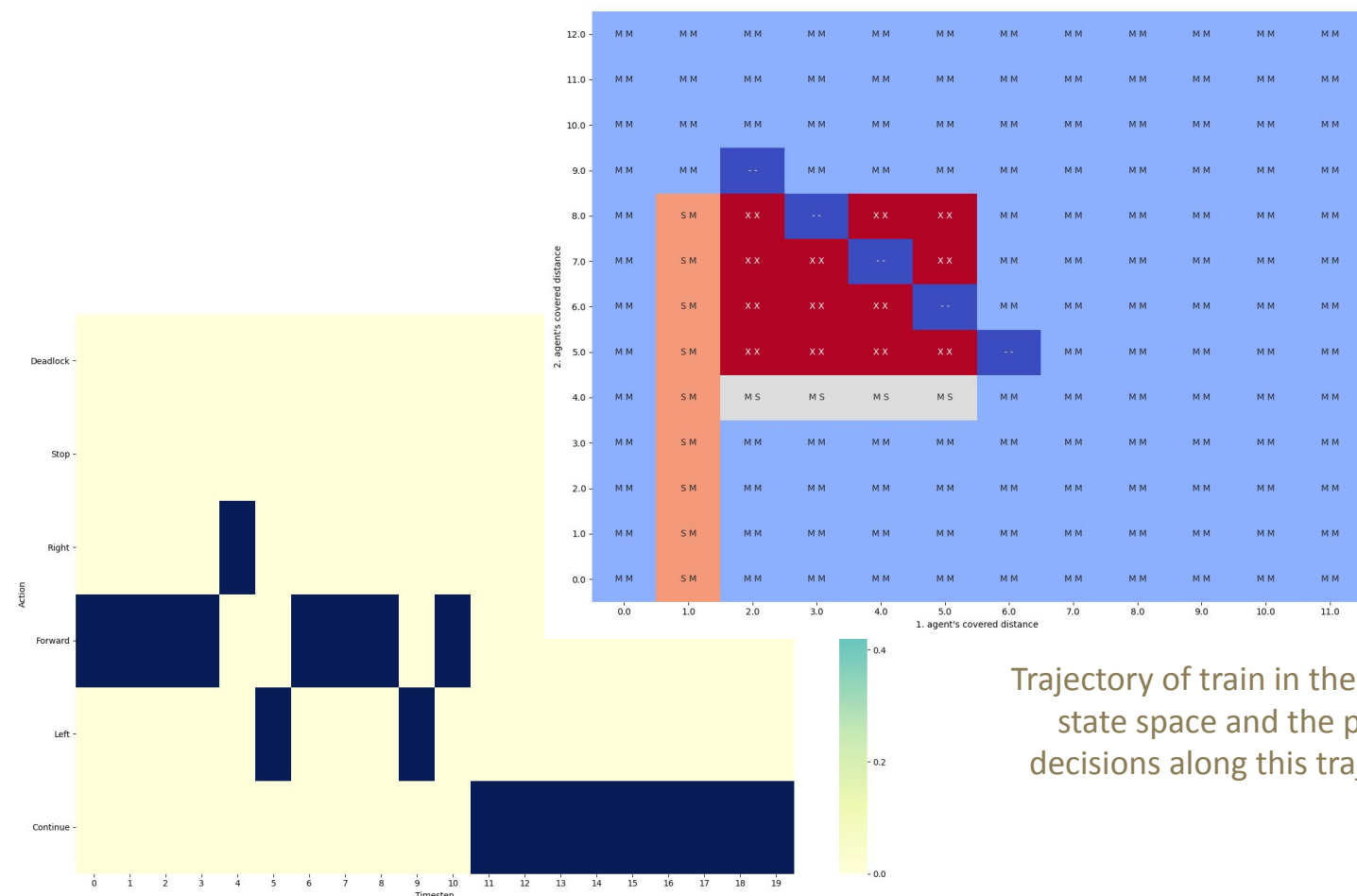
## CHALLENGES AND GOALS

The main challenge was striking a good balance between computable optimal solutions to short term problems but still keeping an eye on far away problems as well.

The goal was defining a suitable state space that facilitates reinforcement learning for this set of problems.

## MATHEMATICAL AND COMPUTATIONAL METHODS

Dynamic programming is used to solve typical, small scale problems. A\* search is used to construct a set of interesting local scenarios. A novel state space representation and problem decomposition is defined. Reinforcement learning is used to learn optimal policies.



Trajectory of train in the defined state space and the policy decisions along this trajectory

