

Historical maintenance relevant information road-map for a self-learning maintenance prediction procedural approach

Francisco J Morales¹, Antonio Reyes¹, Noelia Cáceres², Luis M Romero¹,
Francisco G Benitez¹, Joao Morgado³, Emanuel Duarte³ and Teresa Martins³

¹Transportation Engineering, Faculty of Engineering, University of Seville, Spain

²Transportation Research Unit, AICIA, Seville, Spain

³Infraestruturas de Portugal, Coimbra, Portugal

E-mail: benitez@us.es

Abstract. A large percentage of transport infrastructures are composed of linear assets, such as roads and rail tracks. The large social and economic relevance of these constructions force the stakeholders to ensure a prolonged health/durability. Even though, inevitable malfunctioning, breaking down, and out-of-service periods arise randomly during the life cycle of the infrastructure. Predictive maintenance techniques tend to diminish the appearance of unpredicted failures and the execution of needed corrective interventions, envisaging the adequate interventions to be conducted before failures show up. This communication presents: i) A procedural approach, to be conducted, in order to collect the relevant information regarding the evolving state condition of the assets involved in all maintenance interventions; this reported and stored information constitutes a rich historical data base to train Machine Learning algorithms in order to generate reliable predictions of the interventions to be carried out in further time scenarios. ii) A schematic flow chart of the automatic learning procedure. iii) Self-learning rules from automatic learning from false positive/negatives. The description, testing, automatic learning approach and the outcomes of a pilot case are presented; finally some conclusions are outlined regarding the methodology proposed for improving the self-learning predictive capability.