

ROAD ACCIDENTS SEVERITY PREDICTION: A CASE STUDY IN PORTUGAL

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Summary: Road accidents pose a significant threat to public safety worldwide, requiring effective predictive models to mitigate their severity. This study investigates the prediction of road accident severity in highways for Portugal, employing machine learning techniques in a dataset of about 150,000 accidents over a 4-year period (2017 to 2021). The data was gently provided by the "Autoridade Nacional de Segurança Rodoviária (ANSR)", the Portuguese authority for road safety. Further, ANSR gave also full technical support for the development of this study.

The research analyses various factors that influence the severity of the accident, including weather conditions, traffic, and the characteristics of accidents. The study evaluates the performance of multiple classification algorithms in predicting accident severity levels.

Furthermore, an analysis of feature importance is performed, which allowed identifying the key determinants that affect accident severity. Finally, this work resulted in a platform application deployed in the National Road Safety Authority, contributing to improving road safety measures and policy interventions, with the final goal of reducing the frequency and severity of accidents on Portuguese roads.