

Resilient Arrival Runway Occupancy Time prediction for decision-making tool in Barcelona (LEBL) airport

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Abstract— When trying to maximise the use of the airport airside, it becomes a key factor for tower Air Traffic Controllers (ATCOs) to optimise the runway occupancy time for landing aircraft (AROT) while maintaining the required safety levels and/or reducing unsafe events such as missed approaches and runway incursions. Accurate tools to detect and predict unsafe events are becoming necessary in order to assist ATCOs in their tasks. In aviation, there are many different data sources and the paradigm of data sharing between different stakeholders is not fully implemented. This paper proposes the use of novel machine learning techniques to model AROT prediction in Barcelona airport (LEBL), using ten models trained with more than 270.000 flights, exploiting different airport and Air Navigation Service Provider (ANSP) data sources to design a resilient decision-making tool that assists tower ATCOs in real operation environment to optimize runway occupancy while increasing the safety level by decreasing human error.