

AMUES: An Expert System to Manage Airplane Ground Traffic on Airports

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Expert systems usually facilitate problem solving when a huge knowledge base is present where the sequential trying of rule combining would take too much time to process. In those application areas, the input-response time interval does not play a fundamental role. In addition, the system often prints out a production scheme together with its final answer so that the answer can be checked with a real expert if necessary. In this work, however, an expert system is used to model expert behavior under real-time aspects: an airport controller has to decide about the direction to take for every airplane currently on the ground. This includes fairness and efficiency as well as speed and correctness. In most cases, there is no time for a human controller to supervise the output of the expert system, and wrong outputs can have disastrous consequences. AMUES solves this traffic management problem for a small airport (Berlin-Tegel, Germany) using a rule-based real-time expert system. It is meant to completely automate the whole traffic management on ground.