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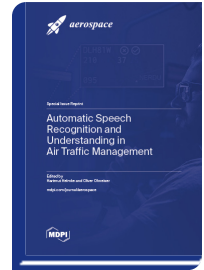
Special Issue Reprint

Automatic Speech Recognition and Understanding in Air Traffic Management

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Automatic Speech Recognition and Understanding (ASRU) has the potential to reduce air traffic controllers' (ATCos) workload and to enhance air traffic management (ATM) safety. Automatic Speech Recognition (ASR) transforms voice signals into a sequence of words, e.g., "speed bird four one six descend flight level one two zero". Automatic Speech Understanding extracts the meaning from this word sequence, e.g., that the aircraft with the callsign "BAW416" should "DESCEND" to roughly "twelve thousand feet". The Special Issue contains 12 articles authored by 54 different authors, working for 23 institutions that are located in 13 countries on four continents. These articles discuss (a) ontologies for modeling words and semantics, (b) the extraction of aircraft callsigns and complex commands, (c) ASRU support for ATCos through callsign highlighting, the filling of aircraft radar labels and flight strips for approach, tower, and apron environments, (d) supporting simulation pilots, (e) speech activity detection, speaker role classification, natural language processing, English language identification, (f) combining ASRU with surveillance data, (g) joining speech and gaze data, and (h) a safety assessment.



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