



Kolloquium zur Masterarbeit

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„Generation of AI Data and Model Requirements for the Next Generation Airborne Collision Avoidance System“

The rapid advancements in Artificial Intelligence (AI) suggest that safety should be considered a design concept rather than an option. Nowadays, safety-critical systems development, including AI, has increased. A significant effort has been proposed till now to improve the requirement engineering process for the safety-critical system in terms of safety aspects. The inclusion of AI in the safety-critical system can make the system more autonomous and help avoid or recover from unsafe states; on the other hand, whose failure may result from minor performance anomalies to catastrophic risks such as death or injuries to humans, loss, and severe damage of equipment and environment. There is a scarcity of information about Software Engineering (SE) methodologies for developing, running, and sustaining AI-based systems, so we need additional AI requirement engineering concepts to maintain AI-based safety-critical systems. This thesis investigates how immersion in traditional software requirement engineering and AI requirement engineering concepts, specifically for data and model requirements can help in the evolution of AI-based safety-critical systems. AI-based data and model requirements have been elicited considering system and sub-system requirements and Operational Design Domain (ODD). Moreover, data and model requirements have been validated using a test case of a Horizontal Collision Avoidance System (HCAS) by following the guidance of AS6983- Process Standard for development and Certification/Approval of Aeronautical Safety-Related Products Implementing AI established by SAE International. In conclusion, the most relevant findings from this thesis are to share the information on integrating standard software system requirement engineering with AI requirement engineering to generate AI-based data and model requirements for AI-based safety-critical systems in aviation

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