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MILANO 1863



DIPARTIMENTO DI
SCIENZE E TECNOLOGIE
AEROSPAZIALI

Scenario Based Training

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Abstract

In this lecture, we will be exploring the topics of scenario-based Training (SBT) for rotorcraft, as well as the use of Helicopter Flight Data Monitoring (HFDM) and flight data records analysis to develop safety metrics and performance models to enhance helicopter safety.

Regarding SBT, we will highlight the main motivation for this type of training as it pertains to helicopter operations, describe the concept of decision-making in aviation and the need to reduce errors through training. We will define Scenario-based Training (SBT), explore various risk management concepts, explain how they can be modified and adapted to develop SBT lesson plans for helicopter operations and show how a pilot evaluation template may be created to assess human factors such as situational awareness, aeronautical decision making, and pilot control authority.

Regarding HFDM and data analysis, we will highlight the need for FDM for rotorcraft operations, define the Aviation Safety Information Analysis and Sharing (ASIAS) program, and using a couple of examples, describe how safety metrics and performance models may be developed from helicopter flight data records in order to support ASIAS for rotorcraft and allow helicopter operators to better understand their operations, mitigate mission-specific as well as community-related risks, and enhance their own safety and that of the industry.

Short Bio

Dr. Payan is a Research Engineer at the Aerospace Systems Design Laboratory, Daniel Guggenheim School of Aerospace Engineering at the Georgia Institute of Technology. She received her PhD in Aerospace Engineering in May of 2013 from the Georgia Institute of Technology. She also received a Master's in Earth and Atmospheric Sciences in May of 2013 from Georgia Tech and a Master's of Science in Aerospace Engineering in 2008 from both Georgia Tech and SUPAERO (French Engineering School in Aeronautics and Aerospace) in Toulouse, France.

Dr. Payan is currently the Georgia Tech Deputy Site Director for the Partnership to Enhance General Aviation Safety, Accessibility, and Sustainability – PEGASAS, a Federal Aviation Administration (FAA) Center of Excellence for General Aviation. Over the past years, she has been involved with several projects related to rotorcraft safety such as the development of rotorcraft safety metrics, the study of scenario-based training, the development of a physics-based modeling and simulation environment to study the efficiency of various wire strike protection systems for various helicopter weight categories, the feasibility to construct a database of wires/cables in a region of the U.S. using machine learning, as well as the analysis of gaps and shortfalls in current weather information available to helicopter pilots, crew, and dispatch for Helicopter Medical Emergency Services (HEMS), law enforcement, air tour/air taxi, and observation/surveillance missions.

Dr. Payan has also been involved in various endeavors related to the design and optimization of systems-of-systems, large scale optimization of flight schedules and commodities networks, the implementation of electric propulsion alternatives to existing aircraft, and the study of the generation and use of environmentally friendly, renewable, and sustainable alternatives to aviation jet fuel. She has been passionate about aeronautics and aerospace from a very young age and earned her private pilot license in June 2015 through the Yellow Jacket Flying Club at Georgia Tech.

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29 May 2020 at 15:00