CHEMICAL ENGINEERING

MUR DM 118 - Artificial intelligence for accident and indident data analysis for the benefit of prevention at the workplace

Funded By	MINISTERO DELL'UNIVERSITA' E DELLA RICERCA [P.iva/CF:97429780584] Dipartimento DISAT
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Context of the research activity	The PhD proposal refers to the adoption of the new developing technologies in the area of data analysis and artificial intelligence applied to the accident and incident data recorded in INAIL database to find undisclosed correlations and trends useful for the prevention of critical events at the workplace for the benefit of sustainability of production processes and work environments. Progetto financiato nell'ambito del PNRR - DM 118/2023 - CUP E14D23001690006
	The PhD proposal aims to explore the potential of new and emerging technologies in the field of data analysis and artificial intelligence to enhance the prevention of critical events at the workplace. This will be achieved by applying these technologies to the accident and incident data recorded in the INAIL database, with the goal of uncovering previously undisclosed correlations and trends. Over the course of three years, the PhD candidate will conduct a thorough analysis of the INAIL database, using advanced data analysis techniques and artificial intelligence algorithms to identify patterns and relationships that may have been overlooked using traditional methods. The insights gained from this analysis will be used to develop new strategies for preventing accidents and incidents at the workplace, with a focus on improving the sustainability of production processes and work environments. In details: Year 1: Conduct a comprehensive literature review to identify the state-of-the-art in data analysis and artificial intelligence techniques for accident and incident prevention. Develop a deep understanding of the INAIL database, including its structure, content, and limitations.

Objectives	Begin preliminary data analysis to identify potential correlations and trends in the accident and incident data. Year 2: Continue data analysis, using more advanced techniques and algorithms to uncover deeper insights into the factors that contribute to accidents and incidents at the workplace. Collaborate with experts in the field of data analysis and artificial intelligence to refine and improve the analysis methods being used. Begin developing new strategies for accident and incident prevention based on the insights gained from the data analysis. Year 3: Finalize the development of new prevention strategies, incorporating feedback from INAIL and other relevant organizations. Conduct a thorough evaluation of the effectiveness of these strategies, using both quantitative and qualitative methods. Write up and defend the PhD thesis, detailing the research conducted, the insights gained, and the contributions made to the field of workplace safety. Throughout the PhD program, the candidate will work closely with experts in the field of data analysis and artificial intelligence, as well as with representatives from INAIL and other relevant organizations. The ultimate goal of this research is to make a significant contribution to the field of workplace safety, by leveraging cutting-edge technology to improve our understanding of the factors that contribute to accidents and incidents on the job.

Skills and competencies for the development of the activity	No specific competencies are required if not a curious mind and some experience in data analysis and risk assessment.