



**IMT Lille Douai**  
École Mines-Télécom  
IMT-Université de Lille

## Call for Applications for a Post-doc position

### “Explainable AI for Decision Support Tools”

This post-doc position is funded through the Chist-Era project "Explainable Predictive Maintenance" (XPM) <https://www.chistera.eu/projects/xpm>. The XPM project aims to integrate explanations into Artificial Intelligence (AI) solutions within the area of Predictive Maintenance (PM). In the XPM project, we will develop different types of explanations. We will demonstrate their usefulness through several dimensions. In particular, the identification of the component or part of the process where the problem occurred. Also, the understanding of the severity and future consequences of the detected deviations; the selecting of the optimal repair and maintenance strategy from among several alternatives created based on different priorities, and the understanding why the problem occurred in the first place as a means to improve the system design for the future.

This post-doc position is dedicated to the design of an explainable decision support tool. It allows us to provide recommendations about the maintenance plans (actions) to perform. The decision support tool will be the equivalent of an adaptive human-machine interface that will provide prescriptive maintenance advice to foster human operators' awareness of the evolution of the degradation dynamics (trigger environmental and operation conditions parameters, degradation characteristics, components reliability and criticality, Remaining Useful Life (RUL), etc.), and will define the actions to be taken for asset management optimization. The impact and efficiency of the provided explanations and recommendations (actions) will be quantified and demonstrated through four selected case studies: electric vehicles, metro trains, steel plant and wind farms.

The candidate must have a PhD thesis in Data Science (Feature engineering, Machine Learning, Deep Learning, Reinforcement learning, Deep-Reinforcement learning) with application to optimization. She/He must be familiar with the use of Python with its associated packages and libraries.

The selected candidate for this post-doc will work with the other partners of the project and build her/his results based on the results of the other partners through regular meetings. The workplace of the post-doc will be at the Institute Mines-Telecom Lille-Douai in Douai-France. The period of the post-doc is 18 months, starting as soon as possible.

For more details and/or to apply for this position please send your motivation letter, the names of two references, and a detailed CV including the references of your publications and achievements to:

**Prof. Moamar Sayed-Mouchaweh**

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