Title: **Physics-Informed Machine Learning**

Journal**: IEEE Transactions on Artificial Intelligence**

Submission website**:**
https://mc.manuscriptcentral.com/tai-ieee

Introduction

In the last few decades, understanding multiscale physics in many applications represented a wide research task showing interesting and promising progress. Analytical and computational tools face important challenges especially related to cost and uncertainty. From this perspective, thanks to the huge among of available data coming from more than a trillion sensor, data-driven methods play a crucial role. Machine Learning appears to be a big player; in particular, Deep Learning can automatically extract features from big data. Meanwhile, it is well known that data-driven approaches can generate physically inconsistent or implausible predictions while excellently fitting the observations. Combining physics law and domain knowledge into Machine Learning models is an evolving frontier; the goal is to provide some "informative priors" such as theoretical constraints on top of observational ones. Therefore, Physics-Informed Machine Learning aims to introduce a novel paradigm to improve the performance of the learning algorithms.

The main goal of this Special Issue is to present recent results and new research directions in Physics-Informed Machine Learning. The Topics of the Special Issue include but are not limited to:

- Physics-Informed Neural Networks
- Physics-Informed Machine Learning architectures
- Physics-Informed Machine Learning algorithms
- Quantum-based Machine Learning
- Kernel-based regression models
- Hybrid approaches for Physics-Informed Machine Learning
- Application of physical sciences to model and improve ML techniques
- Machine Learning for advancing physics of life sciences and physical sciences
- Machine Learning for advancing physics
- Machine learning for multi-scale modelling
- High-impact applications of machine learning to physical sciences, experiment or theory
- Machine learning model interpretability for obtaining insights to physical systems

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- Deadline Paper Submission: June 30, 2022
- Initial Paper Decision: September 1st, 2022
- Revised Paper Submission: October 30, 2022
- Final Paper Decision: November 30, 2022

- Final Paper Submission: December 14th, 2022