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Unraveling the Black Box: Unleashing the Power of Explainable Deep Learning in Advanced Engineering Sciences

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Message from the Guest Editor

The Special Issue titled "Unraveling the Black Box: Unleashing the Power of Explainable Deep Learning in Advanced Engineering Sciences" directly aligns with the MDPI journal's focus on symmetry/asymmetry phenomena across disciplines. Deep learning, particularly explainable deep learning (XDL), illuminates symmetries and asymmetries in modern technology. This Special Issue delves into XDL's role in understanding complex AI models, shedding light on symmetrical patterns while addressing asymmetrical challenges in AI deployment. Through diverse engineering domains, it reveals unique manifestations of symmetry and asymmetry, offering insights into data interpretation, model transparency, and ethical considerations. By bridging this gap, this Special Issue pioneers transparent, interpretable, and trustworthy AI-driven research in line with the MDPI Journal's goals.



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Special Issue



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Message from the Editor-in-Chief

Symmetry is ultimately the most important concept in natural sciences. It is not surprising then that very basic and fundamental research achievements are related to symmetry. For instance, the Nobel Prize in Physics 1979 (Glashow, Salam, Weinberg) was received for a unified symmetry description of electromagnetic and weak interactions, while the Nobel Prize in Physics 2008 (Nambu, Kobayashi, Maskawa) was received for the discovery of the mechanism of spontaneous breaking of symmetry, including CP symmetry. Our journal is named *Symmetry* and it manifests its fundamental role in nature.

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