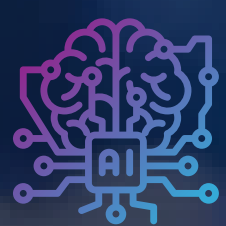




The First International
Conference on Advances in
Operator Theory and
Applications

WORKSHOP AI



AI & Physics-Informed Neural Networks
(PINNs) Workshop

About Our Workshop

This workshop offers a comprehensive introduction to Physics-Informed Neural Networks (PINNs). Participants will learn how to integrate physical laws directly into neural network architectures to numerically solve ordinary differential equations (ODEs) and partial differential equations (PDEs). The training combines theoretical foundations with practical implementations, enabling participants to grasp the mathematical principles of PINNs while enhancing their scientific programming skills. Topics covered include universal approximation theory, the variational formulation of PINNs, gradient descent optimization, and advanced techniques for handling boundary conditions. Through two progressive hands-on sessions, participants will implement PINN solutions for classic problems: a harmonic oscillator (ODE) and the 1D diffusion equation (PDE). This practical approach provides concrete insights into the advantages and limitations of this emerging method compared to traditional numerical techniques.

SUPPORTED BY



African Mathematical Union



<https://www.africanmathunion.org>

Workshop Details



Instructor: Pr. Bassem Ben Hamed



Contact: bassem.benhamed@enetcom.usf.tn



Duration: 5 hours



Hammamet – Tunisia



24 MARCH
3 Pm

Session 1 :
Foundations and First
Implementation



25 MARCH
3 Pm

Session 2 :
PDEs and Real-World
Applications

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