

HKIAS 10th Anniversary Distinguished Lecture Series On Mathematics and AI

13 October 2025 (Monday)

3:30pm-4:30pm

(Light refreshment will be served from 3:00pm-3:30pm)

Senate Room, 19/F, Lau Ming Wai Academic Building,
City University of Hong Kong



Speaker:

Professor Pierre-Louis Lions

HKIAS Senior Fellow

Professor at the Collège de France
Fields Medalist (1994)

Abstract

In this talk, we discuss some of the connections between Mathematics and Machine Learning (AI). We shall first recall some "historical" facts about Artificial Neural Nets and some early applications. Next, we give some examples of the use of AI in Mathematics and for some other scientific applications. After briefly recalling the power and limitations of AI computations, we shall point out why Mathematics are needed and present some of what is known today. And we conclude with an introduction to some ongoing research projects.

Biography

Professor Pierre-Louis Lions is one of the most prominent experts, worldwide, of the theory of nonlinear partial differential equations. He is a Professor at the prestigious Collège de France in Paris, where he holds the Chair of "Partial Differential Equations and Applications" since 1992.

He has made profound and lasting contributions to the mathematical analysis of the Boltzmann equation, the compressible Navier-Stokes equations, the Hamilton-Jacobi equations, the Hartree-Fock equation, image processing, viscosity solutions, concentration compactness, mean field games, and stochastic partial differential equations.

He is Commandeur in the National Order of the Legion of Honor in France. He is a member of the French Academy of Sciences, of the Accademia dei Lincei, of the Academies of Sciences of Argentina, Chile, and Brazil, of the Academia Europaea, of the Istituto Lombardo, of the Accademia di Napoli, of the French Academy of Technologies, of the World Academy of Sciences (TWAS), and of the Royal Academy of Belgium.

Professor Lions has received numerous awards, including the prestigious Fields Medal in 1994, the Grand Prize Ampère from the French Academy of Sciences, the Grand Prize from the INRIA, France, the IBM Prize, and the Philip Morris Prize. He is "Doctor Honoris Causa" at Heriot-Watt University, at City University of Hong Kong, at the Ecole Polytechnique Fédérale de Lausanne, at Bucharest University, and at Narvik University. He is listed as an ISI highly cited researcher.

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