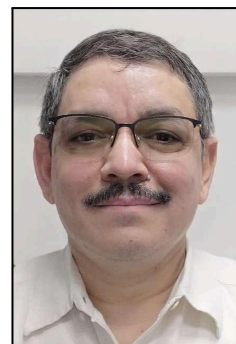


Fundamentals and Applications of AI

Dr. Dinesh Gupta*

Translational Bioinformatics Group, International Centre for Genetic Engineering and Biotechnology, New Delhi, India

Email: dinesh@icgeb.res.in



The lecture and the following hands-on session will introduce the workshop participants to the fundamentals and applications of Artificial Intelligence (AI). The lecture will begin with the introduction of AI, its historical development, and core concepts. Next, the talk will shift gears to emphasize how AI is transforming translational science, leveraging data science, affordable, faster computing, and the availability of large datasets. The second part of the lecture will introduce statistical concepts, data types, probability, correlation, regression, and other related topics that help establish the efficiency, robustness, interpretability, and generalizability of trained AI models. The concepts like data collection, preprocessing, exploratory data analysis, risks, advantages, and disadvantages of AI will also be discussed. The lecture will also illustrate real-world examples of how AI is accelerating translational science — from biomarker discovery, synthetic biology, and drug target identification, patient stratification, disease prediction, and precision therapeutics. The lecture will conclude with an introduction to the hands-on requirements, learning mode, and objectives of the rest of the workshop proceedings.