# Tentative Outline

## Special Thematic Issue for Current Medical Imaging

## Title: Explainable Artificial Intelligence(XAI) based Nano-Biological Data Analysis for smart medical applications

*Guest Editors:* **Dr.S.Vimal, Dr. Danilo Pelusi ,Dr. Seungmin Rho,**

**Dr. Shahid Mumtaz**

### Aims & Scope:

Artificial Intelligence or Deep learning in the present era serves as the biggest choice for the data analysis. With the Effective adversary models it proposes a big solution for the various engineering applications. Nano technology combines the fundamentals of physics, chemistry and biological needs in the engineering . The AI based Nano has been occupying the whole world with the biological needs from NN and Optimization algorithms. AI and the nano sciences bridges the link between the new generation of ICT and for emerging medical applications. The models include Biological computing using the DNA, proteomics and sequence data analysis using the Big data solutions. The ANN modelling provides a optimal solution for the complex solutions that handles the data organised in a decision making process. The AI modelling provides a efficient data analysis for various bioengineering applications such as Drug design and Delivery, Medical imaging and biologically inspired optimization. Artificial Intelligence is the enabling technology that accomplish the tasks completed by human and living beings. AI is a tool that combines the task performed in the computer  with statistics using the complex database and dataset. AI is been applied in many domains such as social media networking, web analysis and many medical applications for diagnosing the human diseases. In addition, deep learning algorithms showed remarkable precision and accuracy in the diagnosis of those diseases. Big data analytics has been recently applied towards aiding the process of patient analytics and disease monitoring. The Clinical data process and diagnosis procedures for various Medical problems  should be automated that may help in improving medical treatment diagnosis. Medical data deals with several challenges including non-availability of sophisticated large size databases, high dimensional samples, and class imbalance to name a few. AI based analytical patterns can handle large scale data more efficiently as compared to the traditional machine learning methods and based on the inference , the diagnosis process can be carried in the medical fields.  The research challenges posed by Big Data are not only timely, but will also bring ample opportunities for deep learning. Together, they will provide major advances in science, medicine, and business. The rapidly expanding field of big data analytics has started to play a pivotal role in the evolution of healthcare practices and research.

The rapidly expanding field of big data analytics has started to play a pivotal role in the evolution of healthcare practices and research. It has provided tools to accumulate, manage, analyze, and assimilate large volumes of disparate, structured, and unstructured data produced by current healthcare systems. Big data analytics has been recently applied towards aiding the process of care delivery and disease exploration. However, the adoption rate and research development in this space is still hindered by some fundamental problems inherent within the big data paradigm. The Next generation sequencing is highly relied on the genome research and the phenotype of the data. The genomic sequencing involves processing of the available biological data using the Big data and Cloud applications to deal the Terabytes of data in a high performance computing way. The processing time, management of data and analysis can be done using the AI algorithms in smarter applications to handle those efficiently.

This special issue is specifically formulated with the intent to motivate researchers from various fields to present the novel and optimal solution for deep learning using biological data analysis.

**Keywords:** Machine Learning, Deep Learning, XAI, Biological Data Analysis, High Performance Computing, Next generation sequencing

## Subtopics:

The topics relevant to this special issue include but are not limited to:

- Nano based Biological Computing for Sequence analysis, genomics based analytics for smart medical applications using XAI
- Genomic Data in a Biological Computing using XAI
- Next-Generation Sequencing Technologies and Variant Calling Algorithms with biological data computing using AI based Nano applications

- Newborn Genetic Screening Tools for biological data analysis using XAI
- Nano based DNA computing using XAI
- Novel deep learning architectures using bio-inspired computing methodologies
- Genomics for clinical detection and characterization of bacterial pathogens using AI
- Social networking and AI based suggestions for  smart Medical applications using AI

## Schedule:

- ✦ Manuscript submission deadline: August 30, 2021
- ☐ Announcement of acceptance by the Guest Editors: October 30, 2021
- ✦ Final manuscripts due: December 20, 2021

Any queries should be addressed to cmim@benthamscience.net