J-BHI Special Issue on "Swarm Intelligence in Healthcare Data Analysis for Early Cancer Detection"

Swarm Intelligence (SI) is a form of collective learning and decision-making based on decentralized, self-organized systems. Utilizing SI healthcare tackles the propagation of attacks inside interconnected healthcare organizations and ensures the completeness of the healthcare ecosystem based on security and resilience. In the healthcare sector, swarm intelligence is being utilized to improve diagnosis and treatment, leading to better patient outcomes and more efficient healthcare systems. SI algorithms can be integrated into the healthcare environment for disease diagnosis and treatment of diseases including cancer, heart diseases, tumours, and cardiology, it has been applied in the areas of disease diagnosis and treatment. It has been used to predict cancer at the early stage and solve the complex problem. In addition, it can quickly learn how cancer cells become resistant to anticancer drugs, which can help improve drug development and adjust drug use. Normally, SI algorithms are used in PSO, ICA, FA and IWO for the diagnosis of cancer in solving the optimization of the problem. This will in turn enhance the overall effectiveness of SI in data analysis. However, there are several challenges associated with applying swarm intelligence to cancer-related problems. Some of these challenges include the complexity of cancer, analysis of cancer, validation and clinical translation, resistance and adaptation, etc. These challenges have to be overcome by improved algorithms and models making them more efficient, scalable, and better suited for handling large-scale and high-dimensional cancer datasets. Alternatively, the main application of SI in cancer detection is image analysis and pattern recognition which helps to identify patterns and features associated with cancerous tissues, aiding in early detection and accurate diagnosis.

In the field of SI in cancer research several future advancements are anticipated. Some potential future advancements in SI are being developed in the area of cancer research integration with multi-omics data, swarm robotics for targeted drug delivery etc. In this special issue entitled "Swarm Intelligence in Healthcare Data Analysis for Early Cancer Detection aims to explore various aspects including adaptability, dimensionality, detection and prevention, decision-making, future advancements and other areas of healthcare data with swarm intelligence technology.

Topics of interest include, but are not limited to, the following:

- Recognition of patterns for accurate decision-making of cancer related problems using swarm intelligence
- Recent development in cancer detection with high dimension healthcare data based on Swarm intelligence
- Role of decentralized Swarm intelligence environment in analyzing and predicting the huge volume of cancer data
- Analysis of anticancer drugs in patients using SI
- Future advancement of curing cancer using PSO algorithm in swarm intelligence
- Exploring various algorithms used for cancer prediction in swarm intelligence
- Clinical integration challenges in cancer detection using SI: possibility and opportunities
- Challenges in the application of swarm intelligence algorithm in cancer diagnosis
- Swarm robotics for target drug delivery in cancer therapy
- Future perspective of real-time monitoring of cancer using swarm intelligence

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Key Dates

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