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12th International Conference and Expo on

Proteomics and Molecular Medicine

12th International Conference on

Advancements in Bioinformatics and Drug Discovery

November 26-28, 2018 | Dublin, Ireland

In silico approaches in building computerized solutions based on machine learning techniques for fish taxonomic identification

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Machine learning techniques involve clustering and then categorization. Volumnious increase in biological data at brisk pace and growing interest of researchers in biodiversity conservation programme are demanding quick and precise identification of individuals of biological organisms at taxon/species level. Species identification is the key step for any biological research activity and advent of machine learning techniques have provided ample opportunities to address the challenging task of identification with ease and better accuracy by designing and implementing the self-learning automated system. Machine learning evolved from pattern recognition and computational theory adjusts program actions by formulating the process of generalization and discovers data patterns through learning. Design and implementation of an identification systems based on machine learning techniques not only reduces the burden of routine identification of biological specimen in the biological sciences but also in other areas like face, automobile recognition and fruit grading etc. The present article focuses about features normally applied in fish identification and their use in building identification models based on the machine learning techniques. Additionally, the article discusses merits and demerits of each machine learning technique in fish identification. The discussion of the present article elaborates that such automated systems might play prominent role in promoting its application and utility among the fishery taxonomists and biologists in their routine task of specimen identification.

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