

Proposal

Journal Name: Current Bioinformatics

Special Issue Title: Bioinformatics in Educational Research

Abstract/ Proposal: In recent year, academics have witnessed an emerging multidisciplinary research trend to explore bioinformatics principles and technologies in the education domain. On one hand, in practice learning behaviors become more difficult to be measured and unpredicted in the technology-enhanced learning context with various pedagogical approaches (e.g., blended learning, flipped learning, game-based learning) and digital tools (e.g., virtual reality and augmented reality). The traditional data collection methods in education, such as survey and interview, are increasingly challenged because the subjective physiological information and often big data are required to conduct learning analytics. For example, learners' ElectroEncephaloGram (EEG) and eye movements have been regarded as vital data to examine learners' affection and learning behavior. On the other hand, with the tremendous development in physiologic techniques and availability of the underlying big data in education, educators are putting more efforts into applying bioinformatics methods in learning analytics in order to collect and measure learners' physiological data. As a result, learning behaviors and affection can be explained from the biological perspective, by which learners' perceptions and learning outcomes could be measured. Furthermore, more and more educators stress the students' health status in learning activities, such as the influence of physical environment on their comfort, which spin off a meaningful and significant research area in applying deep learning approaches to analyze students' physiological information. This special issue is to provide both an overview and specific cutting-edge research of bioinformatics applications in learning technologies and learning analytics, which emphasize the employment of deep learning approaches to analyze learners' physiological information, and reveal the relationships between learners' physiological information and their learning behavior and affection.

Scope of Proposed Topic (50 words): The keywords of this special issue include but are not limited to

- (1) Bioinformatics;
- (2) Learning technologies;
- (3) Deep/machine learning;
- (4) Learning analytics;
- (5) Physiological measurement and evaluation
- (6) Multidisciplinary application of machine learning algorithms associating bioinformatics, physiological measure and learning outcome.

Guest Editor Name:

Jun Shen

School of Computing and Information Technology, University of Wollongong, Australia

Jshen@uow.edu.au

Wenli Chen

Learning Sciences and Assessment Academic Group, National Institute of Education, Nanyang
Technological University Singapore

wenli.chen@nie.edu.sg

Yan Dong

School of Educational Technology, Beijing Normal University, China

Yan.Dong@bnu.edu.cn

Xuesong Zhai

College of Education, Zhejiang University, China

zhxs@mail.ustc.edu.cn

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