Machine learning: principles and practices

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Artificial Intelligence (AI) and Machine Learning (ML) use tools to automate repetitive, rules-based tasks, increasing efficiency and reducing human error. Freed up human resources can focus on more strategic tasks, which can improve productivity for many parts of the IT industry, improving customer service and enhancing decision-making. AI and ML are enabling advanced analytics, natural language processing, and computer vision, opening up new possibilities for businesses across various sectors. Recent months have seen regenerative AI enter the arena—All indications are that we will have a difficult time thinking of an application that will not benefit from it. Because of its popularity and usefulness in many practical circumstances, regenerative AI and its associated tools will likely become "folk" operations.

The motivation behind this special issue is to bring the included articles—which cover the currently emerging AI + ML landscape—to the notice of those who develop new concepts as well as practitioners who bring the concepts to life. This issue features current work in diverse applications such as predicting student performance, providing ease for selecting appropriate courses and personalized models for sleep detection.

The article by Sumati Pathak et al. proposes a hybrid Deep Learning framework to analyze student performance. This work predicts students' academic performance with high accuracy by processing a self-structured questionnaire covering different aspects of information and communication technology. Such a framework can be used by teachers to innovate in their teaching pedagogy and students to tweak their learning skills to better their performance.

With the advent of online MOOCs based education complementing class room-based courses and a plethora of skill development video courses that are available, trailers provide an overview of the courses to the learners and help them make an informed choice. In the next article, Prakhar Mishra et. al., propose an AI based approach to Trailer Generation in the form of short videos for online courses. By leveraging Machine Learning and Natural Language Processing techniques, the authors create and validate a template-based auto generation model for trailers for educational videos. This work provides learners content to peruse before enrolling in a course. An empirical evaluation using a prototype system shows the approach performing very effectively in practice.

A semi-supervised learning model is implemented in "*Sleepless*" in the article by Priyanka Mammen et al., which uses unlabelled data sensed from the user's smartphone network activity to develop personalized models and detect their sleep duration for the night. This study has proven the feasibility of building prediction models using the readily available smart phone data. Given that Sleep is critical in promoting every individual's physical and mental well-being, this paper applies ML in the domain of wellness and healing that is becoming more and more relevant and popular with the rapid lifestyle changes around the world.

In summary, the IT industry is continually evolving, driven by the emergence of new technologies that disrupt existing paradigms and create growth opportunities. Staying informed and investing in these transformative technologies will not only help businesses adapt to the changing landscape but also enhance efficiency and customer experiences. In a world where technology is constantly reshaping our lives, organizations must stay agile, be proactive, and

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be ready to embrace IT, ML, AI, regenerative AI and their offsprings. By harnessing the potential of these emerging technologies—by keeping up with the concepts and applying the practices to their work, the IT industry can better position itself to employ and deploy the latest technologies that are on offer.

I hope you will find the articles useful and exciting.

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