

# Editorial Preface

## Special Issue on Recommender Systems: Latest Technologies and Research Challenges Part II

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With the proliferation of the internet, users are exposed to incessant information overload. Recommender systems are intelligent information systems that help to mitigate the information overload problem by helping users find the content incorporating their preferences and choices. Subsequently, various techniques for recommendation generation have been proposed in the last decade and many of them found their successful deployment in the commercial environments. Still, research in Recommender Systems has not come to an end, in particular because the growing number of practical applications of such systems continuously raises new research questions. This special issue (Part II) on “Recommender Systems: Latest Technologies & Research Challenges” of International Journal of Knowledge and Systems Science, includes three papers that focus on varied aspects of recommender systems.

The first paper is on “Petri Net Recommender System for Generating of Perfect Binary Tree” by Gajendra Pratap Singh and Sujit Kumar Singh. The authors have used Petri net recommender system for generating perfect finite and infinite binary tree as its reachability tree and is verified by PIPE 3.0 Petri net toolbox. Petri net recommender framework is a mathematical modelling language of discrete event system to describe the structural and behavioural properties of complex and complicated networks. Finite and infinite perfect binary tree forms a predictive model which maps the input information to output information on the basis of input credits. It involves the use of reachability tree which includes graphs without cycle. This paper describes the existence of Petri net whose reachability tree is a perfect infinite binary tree (PIBT).

Contemporary recommender systems leverage the big data prevalence and intend to be more and more accurate. At the same time, these recommender systems must be wary of falling prey to information overload issues leading to computational complexity. The paper “A Study of Recent Recommender System Techniques” by Saumya Bansal and Niyati Baliyan, is an attempt to provide a holistic review in various recommendation techniques, alongside their limitations and open issues. Moreover, a temporal study on the Google Scholar database is conducted with respect to different recommendation techniques. Commonly used and standard performance metrics, alongside domain-centric datasets have been included in the current study. It is inferred that there is a need to create a user-centric evaluation metric. Few other research gaps discovered are: serendipity avoidance, data coverage increase; user privacy, building more optimised, flexible and accurate recommender

system taking into consideration diversity and avoiding user monotony, etc. This work may facilitate researchers by giving a head-start in the field of recommendation system techniques by providing directions for work and emphasizing on research problems, at hand.

In the third paper on “Petri Net Recommender System to Model Metabolic Pathway of Polyhydroxyalkanoates”, Sakshi Gupta et al. show that the pathways synthesis of PHA from Sugar is a live and a bounded process with the help of Petri Net Recommender Systems. The use of Petri net models has been aiding in the representation and analysis of different metabolic pathways. Petri net can use as a recommender system for the various process as it is easily adaptable and can conclude with better explanation with useful qualitative properties of that process. It is proven as a beneficiary over other models as it can hold the required conditions on the transitions and appropriate information on the places. When dealing with metabolic pathway of the synthesis of PHA, places can hold the number of molecules required or produced during the process and transitions is the conditions or the enzymes which act as a catalyst in the process. The main advantage of using Petri net recommender system is its graphical representation.

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