Discovery of Patterns in the Global Climate System using Data Mining *

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Talk Abstract

Remote sensing data from global observing satellites, combined with data from ecosystem models, offers an unprecedented opportunity for predicting and understanding the behavior of the Earth's ecosystem. This data consists of a sequence of global snapshots of the Earth, and includes various atmospheric, land and ocean variables such as sea surface temperature (SST), pressure, precipitation and Net Primary Production (NPP). Due to the large amount of data that is available, data mining techniques are needed to facilitate the automatic extraction and analysis of interesting patterns from the Earth Science data. However, mining patterns from Earth Science data is a difficult task due to the spatio-temporal nature of the data. This talk will discuss various challenges involved in analyzing the data, and present some of our work on the design of efficient algorithms for finding spatio-temporal patterns from such data and their applications in discovering interesting relationships among ecological variables at various parts of the Earth.

Short Biography

Vipin Kumar is currently William Norris Professor and Head of Computer Science and Engineering at the University of Minnesota. His research interests include High Performance computing and data mining. He has authored over 200 research articles, and co-edited or coauthored 9 books including the widely used text book ``Introduction to Parallel Computing'', and "Introduction to Data Mining" both published by Addison-Wesley. Kumar has served as chair/co-chair for over a dozen conferences/workshops in the area of data mining and parallel computing. Currently, he serves as a co-chair of the steering committee of the SIAM International Conference on Data Mining, and is a member of the steering committee of the IEEE International Conference on Data Mining and the IEEE International Conference on Bioinformatics and Biomedicine. Kumar is founding co-editor-in-chief of Journal of Statistical Analysis and Data Mining, editor-in-chief of IEEE Intelligent Informatics Bulletin, and series editor of Data Mining and Knowledge Discovery Book Series published by CRC Press/Chapman Hall. Kumar is a Fellow of the AAAS, ACM and IEEE. He received the 2005 IEEE Computer Society's Technical Achievement Award for contributions to the design and analysis of parallel algorithms, graph-partitioning, and data mining.