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Topic: String Grammar Fuzzy Clustering in Data Analysis

Abstract:

Data Analysis is a process to analyze data in terms of representing, describing, evaluating, interpreting data using statistical methods. What if the data do not come in the form of statistical representation or a vector of numbers but are in the form of syntactic data, how do we analyze those data? One of the pattern recognition research branches is the syntactic pattern recognition that is able to deal with this type of data set. Each sample in syntactic data set is normally represented as a string. The strings in the same data set can have different lengths. Also, the string does not have any mathematical meaning that we can calculate as if they are vectors of numbers. There are several syntactic pattern recognition methods. However, one of the syntactic pattern recognition methods that is used in many applications is a string grammar clustering method since it is easy to implement and is understandable to humans.

In this talk, we will introduce a set of string grammar clustering algorithms developed at Computational Intelligence Research Laboratory, Chiang Mai University. We also show applications of these algorithms in several real-world problems, e.g., sign language translation system, face recognition, and health applications.

Bio:

Sansanee Auephanwiriyaikul (S'98–M01) received the Ph.D. degree in computer engineering and computer science from the University of Missouri, Columbia, in 2000. She is currently an Associate Professor in the Department of Computer Engineering, Chiang Mai University, Thailand. Dr. Auephanwiriyaikul is a senior member of the Institute of Electrical and Electronics Engineers (IEEE). She is an Associate Editor of the IEEE Transactions on Fuzzy Systems, and is an Editorial Board of the Neural Computing and Applications, an Editorial Board of the International Journal of Computational & Neural Engineering, and an Editorial Board of the Engineering Journal, Chiang Mai. She was a Guest Editor of the Journal of Advanced Computational Intelligence and Intelligent Informatics in 2004. She was a General Chair of the IEEE International Conference on Computational Intelligence in Bioinformatics and Computational Biology (CIBCB 2016). She was a Technical Program Chair, Organizing Committee in several major conferences including the IEEE International Conference on Fuzzy Systems as well. She is also a chair of the IEEE Computational Society – Women in Computational Intelligence and a member of six important IEEE organizations, i.e., Fuzzy System Technical Committee, Bioinformatics and Bioengineering Technical Committee, Data Mining and Big Data Analytics, Distinguished Lecture Program, Webinars, and Student Activities – IEEE Computational Society. As a part of these committee members, she has to promote the research, development, education, and understanding of the technology,

including the creation of the theory and models as well as their applications. She was a member of IEEE P1855 Workgroup for Fuzzy Markup Language Standardization as well.

As a role of administrator, Dr. Auephanwiriyaikul has worked in promoting research in the Chiang Mai University as a director of Research Administration Center (2010 – 2012), a director of Biomedical Engineering Center (2007 – 2010) and a Computer Engineering Department Head (2013 – 2017). Now she is an associate director at the Biomedical Engineering Institute, Chiang Mai University (2017 –). As a role of researcher, she has written many conference papers that have been published in several major conferences, e.g., the IEEE International Conference Fuzzy Systems and journal papers published in several major journals including IEEE Transactions on Biomedical Engineering. She wrote several textbooks in Thai including Digital Image Processing, as well.

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