PREDAVANJE

GA-based Optimization of Fuzzy Rule Bases for Pattern Classification

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Abstract:

Many problems can be cast as pattern classification problems. Consequently, developing effective classifiers has become an important research area. Various techniques have been proposed to produce classifiers, however many of these appear to the user as "black boxes" which merely give a decision without any additional insight.

In this lecture, the focus will be on fuzzy rule-based classification systems which generate simple if-then rules that can thus also be interpreted by the user. Since rule-based classifiers are prone to rule explosion, It will be presented, in particular, optimization approaches to rule base generation that are based on genetic algorithms and a shown to result in a compact yet effective set of rules. In addition, through a simple modification, the resulting classifier can be made cost-sensitive which is in particular useful for applications in medical diagnosis. Example applications will include the classification of gene expression data and the use of classifiers for breast cancer diagnosis.

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Predavač
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Presenter's bio:

Gerald Schaefer gained his PhD in Computer Vision from the University of East Anglia. He worked at the Color & Imaging Institute, University of Derby (1997-1999), in the School of Information Systems, University of East Anglia (2000-2001), in the School of Computing and Informatics at Nottingham Trent University (2001-2006), and in the School of Engineering and Applied Science at Aston University (2006-2009) before joining the Department of Computer Science at Loughborough University in 2009 where he leads now the Vision, Imaging and Autonomous Systems Research Division.

His research interests are mainly in the areas of color image analysis, image retrieval, physics-based vision, medical imaging, and computational intelligence. He has published extensively in these areas with a total publication count exceeding 250. He is a member of the editorial board of more than 10 international journals, reviews for over 70 journals and served on the program committee of more than 200 conferences. He has been invited as keynote or tutorial speaker to more than 30 conferences, is the organizer of various international workshops and special sessions at conferences, and the editor of several books, conference proceedings and special journal issues.

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