

# 講演会のご案内

## Small Dataset Modeling and Application of Plant Medicine Extraction

### - A Novel Virtual Sample Generation Method

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**ABSTRACT:** In recent years, traditional machine learning algorithms are not with satisfying generalization ability on noisy, imbalanced, and small sample training set. Intelligent modeling is an effective method for build prediction model of the plant medicine with ultrasonic extraction. However, in many real world problems, not enough samples can be used, and moreover the sample set is always imbalanced, so over-fitting and generalization problem arise easily. In the plant medicine extraction , there are obstacles when obtaining lots of data during the extraction process, and small dataset will result in a model with low accuracy and poor generalization ability, which has a great influence on it.



In this work, a new method of virtual sample generation based on the combination of RSM and ELM is proposed, and Cuckoo Search (CS) algorithm is used to search and select the virtual sample to improve the problem of low precision of small dataset modeling.

#### BIOGRAPHY OF JUAN CHEN

Dr. Chen is a professor at the College of Information Science and Technology, Beijing University of Chemical Technology, Beijing, China; she earned her Ph.D, M.S, and B.S.degree from Beijing University of Chemical Technology, China, Harbin Institute of Technology, China, and Yanshan University, China, respectively. Her research spans from advanced control and system modeling to soft sensor: (1) the modeling of complex systems, control and advanced control methods, including system identification method, the control method of multivariable multi-delay systems; (2) process optimization technology of process industry based on ultrasonic technology, including ultrasonic extraction and ultrasonic fermentation process optimization; (3) Chemical measurement methods and the optimization algorithm of chemical process; (4) Detection and Intelligent detection method, Including water quality testing technology based on electrochemical methods and ultrasonic signal detection technology. Her research has been funded by the National Natural Science Foundation of China and the Enterprise Foundation of China.

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