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DENFIS

DENFIS Model Building

This is the internal function that implements the dynamic evolving neural-fuzzy inference system (DENFIS). It is used to handle regression tasks. Users do not need to call it directly, but just use `frbs.learn` and `predict`.

Usage

```
DENFIS(data.train, range.data.ori, Dthr = 0.1, max.iter = 100, step.size = 0.01, d = 2)
```

Arguments

data.train a matrix $(m \times n)$ of data for the training process, where m is the number of instances and n is the number of variables (input and output variables).

range.data.ori a matrix $(2 \times n)$ containing the range of the data, where n is the number of variables, and first and second rows are the minimum and maximum values, respectively.

Dthr the threshold value for the evolving clustering method (ECM), between 0 and 1.

max.iter the maximal number of iterations.

step.size the step size of the least squares method, between 0 and 1.

d a parameter for the width of the triangular membership function.

Details

This method was proposed by Nikola K. Kasabov and Q. Song. There are several steps in this method that are to determine the cluster centers using the evolving clustering method (ECM), to partition the input space and to find optimal parameters on the consequent part (Takagi Sugeno Kang model) for the IF-THEN rule using a least squares estimator.

ECM is a distance-based clustering method which is determined by a threshold value, `Dthr`. This parameter influences how many clusters are created. In the beginning of the clustering process, the first instance from the training data is chosen to be a cluster center, and the determining radius is set to zero. Afterwards, using the next instance, cluster centers and radius are changed based on certain mechanisms of ECM (please see `ECM`). All of the cluster centers are then obtained after evaluating all the training data. The next step is to update the parameters on the consequent part with the assumption that the antecedent part which we got from ECM is fixed. Actually, ECM can perform well as an online clustering method, but in this package it is used in an offline mode.

References

N.K. Kasabov and Q. Song, "DENFIS: Dynamic evolving neural-fuzzy inference system and its Application for time-series prediction", IEEE Transactions on Fuzzy Systems, vol. 10, no. 2, pp. 144 - 154 (2002).

See Also

`DENFIS.eng`, `frbs.learn`, and `predict`

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print(a)
```

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```
var a = b
```

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